The Builder.

SATURDAY, JUNE 9, 1855.

THE return to the Universal Exhibition at Paris. The area of the great nave being 100,000 feet, and the whole area of the main building but little exceeding 300,000 feet, it is obvious, that the difficulties of their position drove the authorities into an arrangement of glass-cases and counters, which greatly encroaches upon the amount of space covered by the noble central roof. That they were bound to sacrifice artistic effect to the demands made upon them for exhibiting area, is unquestionable, and the intrusion, into what would otherwise have been a magnificent apartment of about 160 feet by 600 feet, of a 50-feet depth of counters and stalls all round it, is therefore to be overlooked; but, for the overpowering height and bulk of those stalls which project farthest into the main area, we can find no possible excuse. It is, indeed, to be doubly regretted that the regulations of the Imperial Commission, through its officers, should have imposed as an absolute condition upon the occupants of these prominent situations, that their glass-cases should rise to their present unnecessary height; since not only did it entail very serious additional expense upon such exhibitors, for no end really useful to them, but it blocked up and lessened the apparent dimensions of the building to a most serious extent. The really judicious policy would have been to have kept the most prominent objects low, and to have risen gradually to the greatest height (which should have been limited except in a few cases to 15 feet) on a face with the gallery frontage. In that way the same amount of space might have been utilized, and those obstructions avoided which on the day of opening deprived a large proportion of the visitors of any possibility of enjoying what should have been a great national spectacle, but what really degenerated into a fête enjoyed only by a comparatively limited number of invited guests.

A rough approximate idea may be formed of the way in which the space has been divided and allotted by assuming that the building is separated by its longitudinal axis into two halves, of which one has been given to foreign countries and the other retained for France itself. Supposing the foreign half to be equally divided by the transverse axis, one portion is occupied by Great Britain and its colonies, and the remainder is subdivided among the other contributing countries,—the relative order of importance of whose displays stands about as follows;—the Zollverein, including Prussia, Bavaria, Saxony, Wurtemburg, Hanover, &c. first; Belgium, second; Austria, third; Spain and Portugal, fourth; Tuscany, fifth; and several others, including China, America, Turkey, Sweden and Norway, &c. at present nowhere.

The visitor, entering by the great central doorway from the Champs Elysées, finds himself at once among the French goods. Advancing into the nave he will see, directly opposite him, the efforts America will doubtless make to vindicate her manufacturing and commercial reputation, which, large assumption, and comparatively small performance, in 1851, and the unsatisfactory results of her own Industrial Exhibition, have combined to tarnish in the eyes of at least the superficial observers of Europe. We regret to be obliged to use the future tense advisedly; nor are we likely to be among those by whom this regret must be most poignantly felt, for the protracted nonentity of America in this great gathering of the nations cannot but be mortifying to the multitude of her intelligent citizens, who now absolutely throng the great highways of the Old World. On the left of America, stretch away to the end of the building the British possessions, with India itself in the far east. On the ground-floor of that side of the building, England allies itself with France, while, in the gallery, India fraternises with Turkey, which, in its turn, stands near, and yet aloof from Tuscany. America has, as neighbours on her right, Belgium, Austria, and the Zollverein, which completely fill up the remainder of the southern half of the building as far as the western wall. On that side, Spain and Portugal, and some other countries, the geographical features of which are as yet scarcely defined, occupy corresponding positions to those held by Turkey and Tuscany at the eastern end of the structure.

Of the staircase Pavilions, of which there are one at each of the four angles of the building and one in the centre of each of its too long sides, that is to say, six in all—one is appropriated to English stained glass, and a selection of colonial produce; one to artistic objects, principally Prussian; and the remainder almost entirely to French stained glass, of which there is a goodly show. Each country is allowed an amount of frontage to the central area, and of space in it for the exhibition of isolated objects, proportionate to the number of its exhibitors and the total space granted to it. At the date of the opening, the central hall was by no means unpleasantly filled, and low and high objects were so happily placed, as rather to assist than interfere with the effect of one another. Since then the tendency has of course been to rather agg'omerate; but it is earnestly to be hoped that a judicious rigour will be enforced, and that no more will be admitted than can be efficiently and agreeably displayed.

Whilst upon this subject, we cannot but remark the gross injustice which is now being shown to those who have really made sacrifices to comply with the regulations of the commissioners as to time. At the present moment numerous houses of great commercial importance are holding back their goods, obtaining thereby an opportunity of modifying the character of their exhibition, so as to more successfully compete with and overpower their more punctual and straightforward rivals. Why, for instance, should the Imperial Manufactory of Sêvres be allowed some five or six weeks longer than Mr. Minton, to prepare its goods for exhibition. If the international jury only does its duty, one of its first acts should be to exclude from competition all objects not publicly exhibited within some very limited period after the date fixed for the opening of the Exhibition. It is in the department of machinery that the lax administration of definite rules will give rise to the most serious difficulties, and the position of those is by no means to be envied who, sensitively anxious to do strict justice to each, will have to listen to the complaints of A, who will declare that B was allowed two months more time to complete and finish off his machinery than he was;—of C, who will urge that his original idea was uncovered six weeks before D's, and has been pirated in the interval by the latter;—of B, who will declare that A is taking advantage of his having been first, to endeavour to make out that his clumsy work is as good and as worthy of reward as B's beautifully-finished engine;—of D, who will declare that his application of power, or mechanical combination, is just as original as C's, and even more perfect, and so on, *ad infinitum*. No one who ever took an interest in an honourable race will deny "that with a false start no running can be fair." It is only by a determined adherence to just conditions that the juries can hope to escape a very painful series of recriminations.

It is a relief to turn from this subject, pregnant with apprehensions for the future, to the very delightful present furnished us by the beauties of much that is exhibited by our distinguished allies, for whose land art as well as nature may have fairly earned the title of "*La belle*." As yet it is true her strength is not fully put out: we miss her Lyons, Sêvres, Gobelins, Aubusson, Beauvais, and other great manufacturing establishments: still, much of what we have is eminently distinguished by the same good qualities which have won for her artist-workmen their world-wide reputation. Conspicuous in the great nave are the bronzes of Collas and Barbedienne, the furniture of Tahan, the Carton pierre of the Maison Hubert; the laces, "Point d'Alençon" and "Chantilly" of the *fournisseurs de l'impératrice*; the military trophy of the national ordnance departments, bristling with mischief; glass rivalling Osler's, and china not quite equal to Copeland's, Minton's, and Daniell's. Among the isolated objects in the nave are several illustrating the progress which has been made lately in France in elaborate revivals of the technical arts of the Middle Ages. The most important is a gilt altar designed by M. Viollet le Duc, and executed by M. Ponssielgue-Rusand, of Paris. The reputation possessed by both has been well maintained, but will not be materially advanced by this work, which, though wrought out with extreme care, and enriched with enamels of perfect execution, yet lacks spirit and that crispness of handling which characterises ancient work. It is to be regretted that Messrs. Hardman have not yet attempted a work in metal of an equally ambitious character: it would have been interesting to have had an opportunity of comparing their work with that of M. Rusand. In all small objects Messrs. Hardman have always hitherto had the best of it; and we cannot but fancy that they would do so also in such a specimen as M. Viollet le Duc's altar. Of stone and wood carving as applicable to church fittings, there are several samples, but most of them show that the French artists in relinquishing the antique have lost much of their strength, and that they have substituted for it rather the caricature than the grace of nature, as seen through mediæval spectacles. In point of bulk the great lighthouse, one of the central objects in the nave, attracts most attention. Its glass and apparatus are said by those learned in such matters to be first-rate; but what most attracts the artist's eye are the paintings by Gerome, of French maritime towns, which surround the pedestal upon which the "pharos" has been erected. They are agreeable and dignified, and in their subdued and bas-relief treatment of shadow and colour, show how well the French apprehend the true conditions of mural painting, as no doubt adopted by the Greeks. Among the other leading French objects in the nave are some pretty fountains in cast-iron; and two which are amenable to criticism as tainted by two rather prevalent distempers in Gallic art. In M. Ferrat's Falling Angel we have an instance of the graspings after extravagance in pose, by which too many modern artists endeavour to make their laboured academic treatment of the figure appear bold and original. In this instance the spectator has to judge of the angel upside down, and the desire naturally felt to turn it up the other way is so strong, that it is really exceedingly difficult to fix the attention upon the merits of modelling which the figure certainly possesses. In M. Cain's Eagle and Vulture destroying a Crocodile, we have one of those painful subjects in which agony and savage nature are all the stimulants offered to the imagination. Whether in their literary, pictorial, or plastic productions, our brilliant friends have often a little too much relish for this very strong excitement. True tragedy may justifiably give you the distant groan of the sacrifice,

but it is careful to keep the garbage off the stage.

When we turn from the outside of the French space to its inside, we feel how sadly behind-hand matters really were at the date of the opening, since, although considerable exertions have been made to whip in the exhibitors, but few parts can be said to wear an aspect even approaching completion. The most advanced and satisfactory are the fine art publication courts, which contain beautiful specimens of photography, engraving, chromolithography, &c.: in the first and last, Bissou and Lemercier may be expected to shine conspicuous over their fellows. One of the most important exhibitions, as affecting architecture, is that of terra cotta. A large Byzantine doorway, with complicated details thoroughly worked out, and a window and cornice burnt with almost every line in it as true as if it had been wrought in stone, attest the capabilities of the material in skilful hands.

The British display is eminently satisfactory, its lions being India, Minton, Australia, and Hunt and Roskell. Over the first Dr. Royle presides as representing the East-India Company, who have done themselves great credit by the way in which they have caused the continent over which they rule to be represented. The architectural and artistic arrangements were entrusted by the Company to Mr. Digby Wyatt, who, although very late in the field, so put his shoulder to the same wheel with Dr. Royle that, on the day of opening, the East-Indian Court was generally pronounced by the press to be the success of the day. In his arrangement advantage was taken of four considerable openings in the floor, so as to obtain the effect of a large open area; and in that way was gained for India an appearance of spaciousness no other portion of the Exhibition is calculated to present. The centre feature is a gorgeous tent made up with Indian fabrics, and arranged with the most costly furniture, as for a Durbar, or native reception of foreigners of distinction. Around the tent, and at some distance from it, a complete bazaar in the Hindoo style has been erected, and the goods are displayed in their respective shops, so as to give, as far as possible, a real Oriental aspect to the scene. Gay cases for the brilliant fabrics and jewellery complete the picture, and the style of the whole has come upon the Parisians as an entire novelty. To point out the lessons in industrial design which are to be picked up from the objects exhibited were to open on an almost endless theme: it may suffice to call the student's especial attention to the subject.

Mr. Minton sustains his well-earned reputation for the highest class of table and ornamental china, as well as for every variety of encaustic and tesselated paving: it is, however, in Majolica, and Luca della Robbia ware, that his great stride has been made. The goods he exhibits of these classes are both admirably designed and executed, and are especially suggestive to the architect who would endeavour to enrich his art by the introduction of elegant and legitimate novelty.

Australia shows her monster nuggets, which seem continual loadstones to the "*flaneurs*" of the palace, in the British Pavilion at the head of the stairs. The windows in this gallery are filled with very clever windows by Hardman; some exceedingly well but a little over painted, by Ballantine; and some which are not quite what might have been expected from so important a firm as that of Chance, Brothers, of Birmingham. On the whole, the English stained glass furnishes but an inadequate idea of our national powers in this department. This deficiency is by no means to be attributed to any apathy on the part of the officers of the Board of Trade, as we have reason to know that considerable exertions were made to obtain a more fitting display. Restrictive, and, indeed, prohibitory duties no doubt damped the energies of many whose hands are happily now so full of work as really to be indifferent to a further extension of business.

Messrs. Hunt and Roskell are only one out of many exhibitors of metal-work who have done themselves great credit. Messrs. Elkington's, Garrard's, and Hancock's cases all show excellent manufacture, and often excellent design as well. Vechte, of course, stands out from all others, and his wonderful beauty and dexterity enrich Messrs. Hunt and Roskell's display, so as to make it constantly thronged.

We have singled out some few salient points from the British Exhibition, and could dwell on many more did our limits permit it. Necessity, however, bids us generalize, and restrict ourselves to complimenting London, Glasgow, Manchester, Birmingham, Sheffield, the Potteries, Bradford, and, indeed, most of the great manufacturing centres of the country, upon the zeal and ability with which they have caused their respective localities to be represented.

The Zollverein shines much as it did in Hyde-park. A marked improvement has, however, taken place in the Prussian terra-cotta work. The large fountain in the nave in this material is an exceedingly graceful affair. Architects will also be interested in the Cologne stone carving, which includes a Brobdignagian finial from the Cathedral.

Belgium maintains its old superiority in wood carving, lace, and embroidery: the position it has more lately acquired as a great carriage-building, and typographic, country is also worthily vindicated. D'Hoy, of Ghent, shows by his excellent photographs, that her citizens are keenly alive to the progress of the application of science to art, and by and by we may expect great things from her display of arms and machinery.

Austria does not appear to have changed much since 1851. Most of her ornament is in the florid style of her furniture, and her manufactured goods, such as textile fabrics, are for the most part neither as good as the English, nor as tasteful as the French. The exclusion of regular sculpture from this building isolates her from the Milanese school, and materially diminishes the attraction of her present display as compared with that of 1851. Her strong point appears to be her Bohemian glass, of which Count Harrach makes an abundant show.

Tuscany is rich in straw bonnets, and *pietra dura* tables: her exhibition this time is rather commercial and industrial than redolent of the fine arts.

To allude to any of the other countries of the world in their present inchoate state, would be to be little less unjust to them than they have been by their tardiness to themselves. Enough is, however, "looming in the future," to make us feel confident that, at some later date, the "Universal Exhibition at Paris" will justify its title, and offer lessons of paramount importance at once to the philanthropist, the politician, the men of science and of commerce, the artist, and, last not least, the artizan.

OFFICIAL ARCHITECTURE.

THE just published number of the "Council of Education," contains in the report of the Rev. Mr. Kennedy, a suggestive commentary on the growing practice of superseding local knowledge, talent, and all individual responsibility by "*office plans.*"

It is high time that professional men, whether architects or engineers, should resist the encroachments of irresponsible "commissions," and "boards" issuing arbitrary regulations, founded on purely theoretical data.

Mr. Kennedy observes that, some time since, the plans of schools sent out of the Council-office were "very much too large: now they are in the other extreme too small,"—first vast halls, now hovels. Then it appears that the office of the Privy Council have taken up "some theory about the points for obtaining light in a school." The result is, that schools are frequently dark. "Local obstructions in towns will often render it necessary to get light from some point theory will condemn." "But even in an open country district, in the Isle of Man, a plan sent from the Council-office is ridiculously dark. I was compelled to make a new window, which I fear may theoretically be incorrect in every respect, but which, practically," (that means if the children are to see their letters), "cannot be dispensed with."

I must compliment the committee of the Privy Council for their candour in printing this sly hit at the stereotyped despotism of their architect, probably a *dilettante* amateur behind the scenes. There are official bodies who profess to treat matters of practical science, and take care to admit no evidence into their Blue Books that does not square with their fixed theories.

But Mr. Kennedy is a plain-speaking man, with some courage: he passes from windows to floors, and dares to question one of the theories of the Board of Health.

In Lancashire the country people wear wooden-soled clogs, and live in houses with stone floors: as a Lancashire clergyman neatly expresses it, "every child stands on a couple of little wooden floors of its own." Coals, it must be remembered, are cheap in that part of the world: fires are kept burning night and day; so stone floors are not so likely to be cold as they are in a southern county.

The Board of Health, which has theories about everything, has two which affect Lancashire—against wooden-clogs and stone floors. Of course, they have a large body of medical evidence to support their objections: that sort of evidence is not hard to find against many habits and customs incident to the life of those who live on weekly wages: we cannot all indulge in broughams and cork-soled boots. In order to put down Lancashire prejudices, the Board of Health have induced the Council Committee to issue an order withholding assistance from those Lancashire schools that have stone or tile floors until they are changed to wood.

As Lancashire is a county where large populations have gathered together round mining or manufacturing districts within the century, without the advantage of wealthy landowners to support schools for them; this peremptory order will close many schools now with difficulty supported by the exertions of a few zealous individuals—and that without putting down clogs—(it would be just as easy to put down tobacco-pipes, or cigars, or long speeches)—or encouraging wooden floors, because, "nice tiled floors are cheaper, neater, cleaner, and less noisy than wood in a clog-wearing district." The local architect or builder settles to have a tiled floor in his plan, because he has an eye to economy in construction, as well as to the ordinary feet coverings and deep muddy lanes of his county; but his plans are upset by a gentleman whose notions are founded on Paris boots, American over-shoes, and London pavement.

Mr. Kennedy says very decidedly,—"There is no prospect whatever of abolishing clogs in Lancashire. The people are very much annoyed at the order from your lordship to substitute wood for tile floors, which will be and are kept cleaner than wooden floors. The plan of dry-rubbing, suggested by the secretary of the Board of Health, for schools, is found useless and impracticable. It may suit the clean oak planks on the staircase of a private mansion, but is not precisely adapted to the deal floor of a Lancashire National School!"

And he quotes letters from the patrons of schools to the same effect, couched in very amusing terms.

We used to be considered an eminently practical people, able to learn by experience; but if the present retail meddling of boards, commissioners, and official *dilettante* officers is to spread, we shall end in being rocked and dandled, clothed, fed, lodged, apprenticed, and buried, under rules issued annually in a Blue Book, framed by gentlemen who learn the business they teach and regulate, "one lesson daily in advance." Boards, if not closely watched and early checked, fall into the track of the old order of thief-catchers, who improved their income by creating crimes, and then earned the reward for catching the criminals.

A SCHOOL SUPPORTER.

PROPOSED SCHOOL OF ART IN SHREWSBURY.—On Friday before last a meeting was held in the Town-hall, Shrewsbury, to consider the best means of establishing a School of Art and Design there, in accordance with the government plan, a suite of rooms having already been provided for that purpose. The chair was taken by the mayor, and appropriate resolutions, as to formation of committee, &c. were passed.

THE LANDORE VIADUCT, SOUTH WALES RAILWAY.

INSTITUTION OF CIVIL ENGINEERS.

ON the 15th May the paper read was a "Description of the Landore Viaduct, on the line of the South Wales Railway," by Mr. L. E. Fletcher.

The viaduct was described as a timber structure, erected for the purpose of carrying the line of the South Wales Railway across the valley of the Tawe, about three miles above the spot where that river fell into Swansea Bay. The entire length of the viaduct was one third of a mile, or 1,760 feet: the opening in the clear of the span crossing the river, measured between the piers, was 100 feet; and the span of the truss itself, from centre to centre, of 107 feet: the spans of the remaining trusses were 73 feet, 64 feet, 50 feet, 42 feet, and 36 feet respectively. The height from the surface of the river, at low water, to the line of rails, was 88 feet six inches; and from the bed of the river to the top of the structure, 110 feet 6 inches. The transverse width, from out to out of the truss of 107 feet span, was 35 feet; and that of the other trusses was 29 feet 2 inches, the clear width between the parapets being 28 feet.

Some of the local causes rendering the erection of the viaduct necessary were,—the number of openings required; the height of the line of rails enforced by the Act of Parliament; the marshy character of a considerable portion of the ground, which rendered it unfit for the foundation of a high railway bank; and the high rate of compensation demanded for the land. Piles were used for the foundations of the supports in the marsh, and also for that of the truss crossing the river, as the construction of masonry piers in that position would have rendered coffer-dams necessary. The viaduct terminated at both ends in masonry abutments, the intermediate supports or legs being all of timber, with the exception of five masonry piers, which, from local considerations, were found desirable.

The roadway was generally carried on the top of the trusses, but in the case of the span over the river, on account of the headway required, the trusses rose above the roadway, which passed between them.

It was pointed out that, in the structure, the timbers on which the transverse rigidity depended were not subject to the alternate strain of compression and extension, all the tensile strains being taken by wrought iron tie-bolts, and timber only being employed for the struts.

In considering the strains and stability of the structure, together with the cost of construction and maintenance, it was shown that the viaduct was calculated to carry one ton per lineal foot on each rail; the wrought iron tie-bars to bear a strain of five tons per square inch; and the compressive strain upon the timber was about one-sixth of a ton per square inch.

Without supports or planking, the weight of the truss of 107 feet span was 24 cwt. per foot run, and the cost 23*l.* per foot run.

Ditto of 73 feet span was 8 cwt. per foot run, and the cost 9*l.* 15s. per foot run.

Ditto of 64 feet span was 6 cwt. per foot run, and the cost 9*l.* 2s. 6d. per foot run.

Ditto of 42 feet span was 9 cwt. per foot run, and the cost 2*l.* per foot run.

The trusses of 107 feet span deflected about half an inch under the weight of a luggage engine, and immediately regained their normal position. Those of 73 feet span deflected about one and a half inch under a load of 125 tons, laid over 36 feet 6 inches, at the centre of the span, on the south line of rails only. Those of 42 feet span deflected about half an inch under a load of 110 tons, laid on one line of rails only, and dispersed from the centre of one span to the centre of the next span, so that the centre of gravity of the load was directly over the legs or supports.

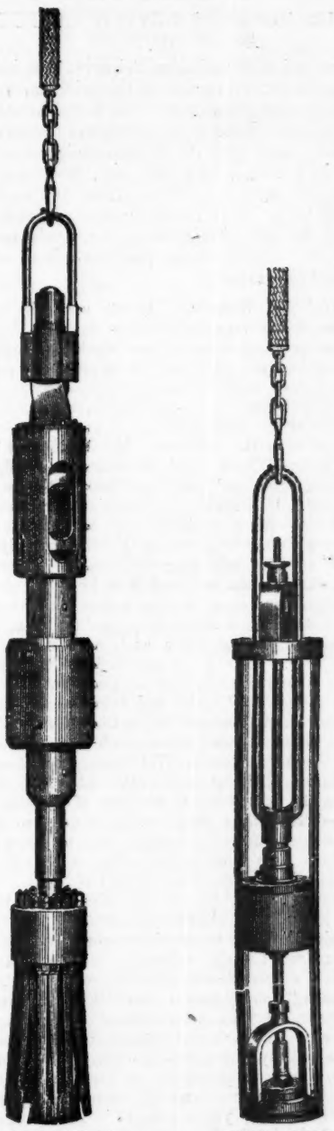
The expenditure upon the structure was 28,720*l.*; the cost per foot run (the average height from the surface of the ground to the line of rails being 55 feet) was 16*l.* 6s.: the cost per square foot on plan, in the clear between the parapets, was 12s.: that of the entire structure, per superficial foot of area of elevation, measuring from the surface of the ground to the line of rails, the area being 103,600 square feet, was 5s. 6d. per square foot of the area; and the cost per cubic foot of the entire structure was 2s. 3d.

The direction of the portion of the line in which the viaduct was situated was confided, during its construction by Mr. Brunel, the engineer-in-chief of the line, to Mr. Robert Brodie, assisted by Mr. Samuel Jones, of Neath, and the whole of the drawings and details of construction were worked out by Mr. Fletcher, the author of the paper, who set out the work and superintended its execution from the commencement of the contract to its close.

EARTH-BORING MACHINERY.

A PAPER on this subject, by Mr. Colin Mather, was read at the Society of Arts on the 30th ult. in the course of which various modes of boring artesian wells were described, and especially a new plan now being brought into operation by Messrs. Mather and Platt.

The construction of the boring head and shell pump, and the mode of acquiring the percussive motion, constitute the chief novelties of the system and machine. The couple-cylinder engine, with the reversing or link motion, is used for winding and lowering apparatus, but an ordinary winding-engine, similar to those used in collieries, may be applied.



BORING HEAD. SHELL PUMP.

The boring-head consists of a wrought-iron bar, about 8 feet long, on the lower part of which is fitted a block of cast iron, in which the chisels or cutters are firmly secured. Above the chisels an iron casting is fixed to the bar, by which the boring-head is kept steady and perpendicular in the hole. A mechanical arrangement is provided, by which the boring-head is compelled to move round a part of a revolution at each stroke. The loop or link by which the boring apparatus is attached to the rope is secured to a loose casting on the wrought-iron bar, with liberty to move up and down about 6 inches. A part of this casting is of square section, but twisted about one-fourth of the circumference. This twisted part moves through a socket of corresponding form on the upper part of a box, in which is placed a series of ratchets and catches, by which the rotary motion is produced. Two objects are here accomplished—one the rotary motion given to the boring-head, the other a facility for the rope to descend after the boring-head has struck, and so prevent any slack taking place, which would cause the rope to dangle against the side of the hole, and become seriously injured by chafing.

The shell-pump is a cylinder of cast-iron, to the top of which is attached a wrought-iron guide. The cylinder is fitted with a bucket similar to that of a common lifting-pump, with an India-rubber valve. At the bottom of the cylinder is a clack, which also acts on the same principle as that in a common lifting-pump, but it is slightly modified to suit the particular purpose to which it is here applied. The bottom clack is not fastened to the cylinder, but works in a frame attached to a rod which passes through the bucket, and through a wrought-iron guide at the top of the cylinder, and is kept in its place by a cotter, which passes through a proper slot at the top of the rod. The pump-rod, or that by which the bucket is worked, is made of a forked form, for the twofold purpose of allowing the rod to which the bottom clack is attached to pass through the bucket, and also to serve as the link or loop by which the whole is suspended.

The wrought-iron guide is secured to the top of the cylinder, and prevents the bucket from being drawn out when the whole is so suspended. The bottom clack also is so arranged that it is at liberty to rise about six inches from its seating, so as to allow large fragments of rock, or other material, to have free access to the interior of the cylinder when a partial vacuum is formed there by the up-stroke of the pump.

The percussive motion is produced by means of a steam cylinder, which is fitted with a piston of 15 inches diameter, having a rod of cast-iron 7 inches square branching off to a fork, in which is a pulley of about 3 feet in diameter, of sufficient breadth for the rope to pass over, and with flanges to keep it in its place. As the boring-head and piston will both fall by their own weight when the steam is shut off, and the exhaust-valve opened, the steam is admitted only at the bottom of the cylinder: the exhaust-port is a few inches higher than the steam-port, so that there is always an elastic cushion of steam of that thickness for the piston to fall upon.

The valves are opened and shut by a self-acting motion derived from the action of the piston itself, and as it is of course necessary that motion should be given to it before such a result can ensue, a small jet of steam is allowed to be constantly blowing into the bottom of the cylinder: this causes the piston to move slowly at first, so as to take up the rope, and allow it to receive the weight of the boring-rod by degrees, and without a jerk. An arm which is attached to the piston-rod then comes in contact with a cam, which opens the steam-valve, and the piston moves quickly to the top of the stroke. Another cam, worked by the same arm, then shuts off the steam, and the exhaust-valve is opened by a corresponding arrangement on the other side of the piston-rod. By moving the cams the length of the stroke can be varied at the will of the operator, according to the material to be bored through. The fall of the boring-head and piston can also be regulated by a weighted valve on the exhaust-pipe, so as to descend slowly or quickly, as may be required.

The general arrangement of the new machine may be described as follows:—

The winding-drum is 10 feet in diameter, and is capable of holding 3,000 feet of rope, 4½ inches broad and half an inch thick: from the drum the rope passes under a guide pulley, through a clam and over the pulley which is supported on the fork end of the piston rod, and so to the end which receives the boring head, which being hooked on and lowered to the bottom, the rope is gripped by the clam. A small jet of steam is then turned on, causing the piston to rise slowly until the arm moves the clam, and gives the full charge of steam: an accelerated motion is then given to the piston, raising the boring-head the required height, when the steam is shut off, and the exhaust opened in the way described, thus effecting one stroke of the boring-head as regulated by a back pressure valve in the exhaust pipe. The exhaust port is 6 inches from the bottom of the cylinder: when the piston descends to this point it rests on a cushion of steam, which prevents any concussion. To increase the lift of the boring-head or compensate for the elasticity of the rope, which is found to be 1 inch

in 100 feet, it is simply necessary to raise the cams on the cam shaft whilst the percussive motion is in operation. The clam which grips the rope is fixed to a slide and screw, by which means the rope can be given out as required. When this operation is completed, and the strata cut up by a succession of strokes thus effected, the steam is shut off from the percussive cylinder, the rope unclamped, the winding-engine put in motion, and the boring-head brought up and slung from an overhead suspension-bar by a hook fitted with a roller to traverse the bar. The shell-pump is then lowered, the *débris* pumped into it, by lowering and raising the bucket about three times, which the reversing motion of the winding engine readily admits of. It is then brought to the surface and emptied by the following very simple arrangement. At a point in the suspension-bar a hook is fixed perpendicularly over a small table in the waste tank, which table is raised and lowered by a screw. The pump being suspended from the hook hangs directly over the table, which is then raised by the screw till it receives the weight of the pump. A cotter, which keeps the clack in its place, is then knocked out, and the table screwed down. The bottom clack and the frame descending with it, the contents of the pump are washed out by the rush of water contained in the pump cylinder. The table is again raised by the screw, and the clack resumes its proper position: the cotter is then driven into the slot, and the pump is again ready to be lowered into the hole as before. It is generally necessary for the pump to descend three times in order to remove all the *débris* broken up by the boring head at one operation.

The following facts, obtained from the use of the machine in boring in the new red sandstone at Manchester, will show its actual performance, and enable us to compare it with the other systems mentioned in this paper. The boring-head is lowered at the rate of 500 feet a minute: the percussive motion is performed at the rate of twenty-four blows a minute; and, being continued for ten minutes, the cutters in that time penetrate from 5 to 6 inches: it is then wound up at 300 feet a minute. The shell-pump is then lowered at the rate of 500 feet a minute, the pumping continued for one minute and a half, and being charged, the pump is wound up at 300 feet a minute. It is then emptied, and the operation repeated, which can be accomplished three times in ten minutes, at a depth of 200 feet. The whole of one operation, resulting in the deepening of the hole 5 to 6 inches, and cleansing it of the *débris* ready for the cutters or boring-head being again introduced, is seen to occupy an interval of twenty minutes only. The value of these facts will be best shown by comparing them with the results by the old method.

At Highgate the boring has occupied two years in attaining a depth of 680 feet from the bottom of a well 500 feet deep from the surface. Their progress at present is at the rate of 6 inches per week, working night and day. At Warwick, thirteen months were occupied in boring 400 feet through red marl; at Saltaire, two years in going 80 yards.

Some of the more important public uses to which the new machine can be applied may now be briefly enumerated.

Sanitary questions deservedly occupy at the present time a large share of public attention. Water, as is well known, is the chief agent in sanitary reform. It is necessary for flushing sewers, for supplying baths and washhouses, as well as for meeting the domestic wants of all classes of the community. The importance of cleanliness cannot be overrated, as a means of promoting the general health, and it imposes the necessity for a much more copious supply of pure water than is as yet enjoyed in most towns. Many small towns which are so situated that they cannot command a supply of water from natural sources, are prevented from obtaining it by boring, on account of the great expense, and still more the vexatious uncertainty of the process. The corporation of Manchester have expended upwards of a million sterling in supplying that city and its neighbourhood with water, and they sell it to the corporation of Salford at the rate of threepence per thousand gallons. It is confidently believed that by the new method of boring an abundant supply of water could be procured on the spot at half that price. Thus, in a sanitary point of view, the new machine is of the utmost value, since it enables us to procure a much greater supply of water in far less time, and from depths which were all but inaccessible on the old method of boring. For example, the work at Highgate, which has occupied two years, could have been done in thirty-three days. That at Warwick, which has occupied thirteen months, could have been done in twenty days. That at Saltaire, to supply the workpeople with drinking water, which has occupied two years, could have been done in twenty-nine days.

MR. RUSKIN'S REVIEW OF THE ACADEMICIANS.

THE author of "Modern Painters" has issued a circular letter on some of the principal works in the present Exhibition of the Royal Academy, and proposes doing so on subsequent occasions.* He has fallen foul of the Academicians in unmeasured terms, and has not discovered a redeeming work proceeding from any member of the body. The review is abusive and uncandid, but contains, nevertheless, useful teaching. We extract those portions which relate to the Academicians:—

(78) "The Wrestling" in *As you like it*, D. Maclise, R.A.—Very bad pictures may be divided into two principal classes—those which are weakly or passively bad, and which are to be pitied and passed by; and those which are energetically or actively bad, and which demand severe reprobation, as wilful transgressions of the laws of all good art. The picture before us is of the last class. Mr. Maclise has keen sight, a steady hand, good anatomical knowledge of the human form, and good experience of the ways of the world. If he draws ill, or imagines ungracefully, it is because he is resolved to do so. He has seen enough of society to know how a duke generally sits—how a young lady generally looks at a strange youth who interests her; and it is by vulgar choice, not vulgar ignorance, that he makes the enthroned duke straddle like a village actor, and the young lady express her interest by a cool, unrestrained, and steady stare. It is not worth while to analyse the picture thoroughly, but let us glance at the two opponent figures—Charles and Orlando. The spectator can certainly see nothing in this "Charles," but a grim, sinister, sinewy monster, wholly devoid of all gentleness or humanity. Was Shakspeare's Charles such an one? So far from it, that into his mouth is put the first description of the love of Rosalind and Celia—"The duke's daughter, her cousin, so loves her, being ever from their cradles bred together, that she would have followed her exile, or have died to stay behind her: never two ladies loved as they do." So far from it, that he comes to Oliver especially to warn him against allowing his brother to wrestle with him. "Your brother is but young and tender; for your love, I would be loth to foil him." Then, on Oliver's execrable slander of Orlando, poor honest Charles is "heartily glad I came hither: if he come to-morrow, I'll give him his payment;" this being not in cruelty, but in honest indignation at Orlando's ascribed villany: nevertheless, when the trial comes, although flushed with victory, and haughty in his supposed strength, there is no bitterness in his question—"Where is this young gallant?" Poor Charles is as much slandered here by the painter as Orlando was by his brother. Well, but what of Orlando himself? He folds his hands, and turns up his eyes like a lover in his last appeal to his lady's mercy. What was the actual fact? Orlando had been but that instant called before the princesses: he had never seen them before in his life. He is a man of firm, calm, and gloomy character—the sadness having been induced by injustice: he has no hope, no thought of Rosalind or her love, at this moment: he has challenged the wrestler in quiet resolve to try with him the strength of his youth—little caring what comes of it. He answers the princesses with deep and grateful courtesy, but with a despairing carelessness of his fate—"If I be foiled, there is but one shamed that was never gracious; if killed, but one dead that is willing to be so. I shall do my friends no wrong, for I have none to lament me—the world no injury, for in it I have nothing." Imagine the calmness and steady melancholy of the man who would speak thus, and then compare the sentimental grimace (as of a fashionable tenor in a favourite aria), of the Orlando in the picture. Next to pass from imagination of character to realisation of detail. Mr. Maclise is supposed to draw well, and realise minute features accurately. Now, the fact is, that this work has every fault usually attributed to the pre-Raphaelites, without one of their excellences. The details are all so sharp and hard that the patterns on the dresses force the eye away from the faces; and the leaves on the boughs call to us to count them. But not only are they all drawn distinctly, they are all drawn *wrong*. Take a single instance in a single thing. On the part of the hem of the duke's robe, which crosses his right leg, are seven circular golden ornaments, and two halves, Mr. Maclise being evidently unable to draw them as *turning* away *round* the side of the dress. Now observe, wherever there is a depression or fold in the dress, these circles ought to contract into narrow upright ovals. There *is* such a depression at the first next the half one on the left, and that circle ought to have become narrowed. Instead of which it actually widens itself! The second is right. Then the third, reaching the turn to the shade, and all those beyond it, ought to have been in narrowed perspective — but they all remain full circles! And so throughout the ornament. Imagine the errors which a draughtsman who could make such a childish mistake as this must commit in matters that really need refined drawing, turns of leaves, and so on! But to pass from drawing to light and shade. Observe, the light falls from the left, on all the figures but that of the two on the extreme left. These two, for the sake of effect, are in "accidental shadow." Good; but why then has Oliver, in the brown, a sharp light on the left side of his nose! and on his brown mantle? Reflected lights, says the apologist. From what? Not from the red Charles, who is five paces at least in advance of Oliver; and if from the golden dress of the courtier, how comes it that the nearer and brighter golden dress of the Duke casts *no reflected light* whatever on the yellow furs and red hose of the wrestler, infinitely more susceptible of such a reflex than the dress of Oliver?

(94) "The River's Bank;" T. Creswick, R.A.—This, like most other of the landscapes hung on the line, is one of those works so characteristic of the English school, and so little creditable to them, in which everything is carelessly or ill painted—because it is in a landscape. Nothing is really *done*. The cows have imperfect horns and hides: the girl has an imperfect face, and imperfect hands: the trees have imperfect leaves; the sky imperfect clouds; the water imperfect waves. The colour, of a heavy yellow with dim green, is worse than imperfect; for colour must either be right—that is, infinitely beautiful; or wrong—that is, *less* than beautiful. All tame and dead colour is *false* colour.

(120) "Beatrice;" C. L. Eastlake, P.R.A.—An imitation of the Venetians, on the supposition that the essence of Venetian painting consisted in method: issuing, as trusts in method instead of fact always must issue,—in mere negation. Sir Charles Eastlake has power of rendering expression, if he would watch it in human beings,—and power of drawing form, if he would look at the form to be drawn. But when, because Giorgione and Titian draw broadly, and sometimes make their colours look broken, he supposes that all he has to do is to get a broken breadth; he ends, as all imitators must end, in a rich inheritance of the errors of his original, without its virtues. Titian and Giorgione have a slight tendency to flatness; but Giorgione's G Flat has accompaniments, Sir Charles's C Flat stands alone. The real source of the error may be sufficiently seen in the distance: Titian paints his distances in pure colour,—but at least indicates what is grass, and what is stone. The distant ground here, with its white spot for a castle, is a mere space of dim brownish-green paint, which can by no possibility stand for grass, or moss, or any other natural thing. It seems to me, however, that there are some points in the execution of the picture, considered as an example of certain textures, which are instructive. The whole is careful, and the draperies well cast. But who is the lady? Dante's, Beatrice, or Benedict's? She can hardly be either: her face indicates little piety, and less wit.

(149) "Lear recovering his Reason at the Sight of Cordelia;" J. R. Herbert, R.A.—As No. 78 furnished us with an instance of the class of picture which is actively bad, we have here an equally important instance of the passively bad; which, had it been in a less prominent place, might kindly have been passed without notice; but, since it is thus recommended to the public by its position, it must needs be examined. In the whole compass of Shakspeare's conceptions, the two women whom he has gifted with the deepest souls are Cordelia and Virgilia. All his other women can speak what is in them. These two cannot. The "Nothing, my lord," of Cordelia, and the "gracious silence" of Virgilia, are the everlasting seals by the master of the human heart upon the most sacred writing of its folded and golden leaves. Shakspeare himself could not find

* "Notes on some of the Principal Pictures exhibited in the Rooms of the Royal Academy, 1855." By the Author of "Modern Painters." London: Smith, Elder, and Co. 65, Cornhill. 1855.

words to tell what was in these women. And now, cast down at her father's feet, the alabaster vase is broken—the house of life is filled with the odour of the ointment—all Cordelia is poured forth in that infinite "I am" of fulfilled love.* Do but think of it for one quiet instant. Think of the rejected creature, so long disallowed from daughter's word and act; unsistered also—all her sisterhood changed into pale flame of indignation—now at last, in consummation of all sorrow, and pity, and shame, and thankfulness, and horror, and hope long delayed, watching the veil grow thin, that in those eyes, wasted with grief, was still drawn between her father's soul and hers. Think of it! As for imagining it—perhaps Danté might have imagined it, with the winds of paradise yet upon his brow. As for painting it——. And yet, in the midst of the Royal Academy Rooms of England, and in the midst of the nineteenth century, that profile of firwood, painted buff, with a white spot in the corner of the eye, does verily profess to be a painting of it. It is a thing not a little to be pondered upon, that the men who attempt these highest things are always those who cannot even do the least things well. Around the brow of this firwood figure there is a coronet, and in the coronet four jewels. I thought that, according to Royal Academy principles, in a "high art" picture, this Rundell and Bridge portion of it should have been a little less conspicuous. However, as we find these unideal emeralds and rubies thus condescendingly touched, let us see *how* they are touched. Each stone has a white spot, or high light, upon it. Now, that flash is always the reflection of the highest light to which the jewel is turned; and here, in a tent, it must be of an opening in the tent on the left-hand side. Now, as the jewels are set round the brow, each in a different position, each would reflect this tent door from a different spot of its surface. This change in the position of the reflection would be one of the principal means by which nature would indicate the curve of the coronet. Now, look at the painting. Every gem has actually the high light in the same spot, on the left hand side, all round the brow! The dimness of pictorial capacity indicated by such a blunder as this is very marvellous. For a painter of the slightest power, even though he had not drawn the gems from nature, would infallibly have varied the flash, for his own pleasure, and in an instinctive fulfilment of the eternal law of change. It is nevertheless a fact that, although from some peculiar idiosyncracy, not comprehending the passage in *King Lear*, Mr. Herbert has feeling; and if he would limit his work to subjects of the more symbolic and quietly religious class, which truly move him, and would consider himself by no means a great master, but a very incipient student, and paint everything from the fact and life, faithfully, he would be able to produce works of some value.

(201) "Penserosa;" C. W. Cope, R.A.—The young lady appears to be reading, may possibly be thinking, is certainly passing under a Norman arch, and is very pretty. This *ensemble* is interesting, but had better have been put into the architectural room, as it may materially promote the erection of Norman arches in the gardens of the metropolis, for the better performance of pensive appearances to morning visitors.

(228) "In Betchworth Park;" W. F. Witherington, R.A. (240) "The Bird Keeper;" R. Redgrave, R.A.—We have here two interesting examples of another fallacious condition of landscape—that which pretends to pre-Raphaelite distinctness of detail; but is in all detail, industriously wrong. In Creswick's work the touches represent nothing: here they represent perpetual error, assuming that all leaves of trees may be represented by oval, sharp-pointed touches of yellow or green,—as if leaves had not their perspectives, shadows, and changes of hue, like everything else! There is great appearance of fidelity to nature in these works, but there is none in reality: they are mere mechanical accumulations of similar touches, as a sempstress mechanically accumulates similar stitches. If the spectator desires to know the difference between right and wrong in this matter, let him first examine Mr. Witherington's oval touches, and then cross the room to No. 321, in which the flowers in the window are truly and properly painted, and look at the way the leaves are set and worked there; and if it be supposed that this is only to be done in a cabinet picture, the question is well worth settling at once by merely walking out of the Academy into the National Gallery next door, and looking at the leaves which crown the Bacchus, and the little dancing faun, in Titian's "Bacchus and Ariadne," in which every turn of the most subtle perspective, and every gradation of colour, is given with the colossal ease and power of the consummate master. Examine further, the vine-leaves above on the right, and the flowers in the foreground, and you will return to the Academy with an eye so instructed, as hardly thenceforward to accept, in such matters, fallacies for facts.

(594) "Rome;" D. Roberts, R.A.—This is a large architectural diagram, with the outlines executed sharply in black, the upper half being then painted brick-red, and the lower green-grey. (Note the distinctness of the mannerism in the *outlined* statues and pillars of the chapel in shade upon the right.) I can hardly understand how any man, devoting his time to painting, ever comes to suppose that a picture can be right which is painted in two colours! or by what reasoning he persuades himself that, because seen under the red light of sunset, the purple trunk of a stone pine, the white stucco of house walls, the scarlet of tiles, and the green of foliage, may all be of the same colour. Imagine a painting of a beautiful blue-eyed female face, by sunset, which represented its blue eyes, its nose, its cheeks, and its lips, all of the same brick-red! Mr. Roberts was once in the habit of painting carefully finished cabinet pictures, which were well composed (in the common sense), and fairly executed in the details. Had he continued these, painting more and more, instead of less and less, from nature, he might by this time have been a serviceable painter. Is it altogether too late to warn him that he is fast becoming nothing more than an Academician?

Mr. Ruskin's opinion of the Academicians, as a body, is further conveyed by his concluding remark, touching a picture mentioned to him by a friend, but which he had not himself seen:—

"My friend says it contains the 'unity of perfect truth with invention.' I cannot answer for its doing this, which would place it in the first rank of works of art; but, as it is hung in a place where it is not easily caught sight of, I have little doubt it must be a work of merit."

* "——— I think this lady
To be my child, Cordelia."
Cordelia.—And so I am; *I cry*."

ON BOILER EXPLOSIONS.

WILL you permit me, through the medium of your pages, to call the attention of scientific men to the subject of boiler explosions, their cause, and method of prevention, as not a month passes which does not give us some new instance of their fatal effects; and as almost in all cases the explosion occurs when the steam is comparatively at a low pressure, it must be the effect of a strange force that has by some means or other introduced itself into the boiler, and which instantaneously raises the pressure from several atmospheres to several hundreds, and against which force the safety-valve is nothing. My firm conviction is, Mr. Editor, that this force is electricity.

It is a well-known fact, that boilers contain more or less of the electric fluid, and that the maximum is formed with a low pressure, which fact tends to verify my hypothesis. Now, whatever may be the cause which makes it fulminant, if it could be conducted safely out of the boiler the explosion would not take place, and I see no reason why the application of the lightning-conductor could not be made with success. For example, if several insulated *conductors*, terminating with points made of a metal inoxidable, were introduced into the boiler, the electricity could be carried through the sides of the boiler (as fast as it developed itself) with safety, into the tank or elsewhere.

EDWARD COMBES.

THE CRYSTAL PALACE.

THE flower-show here on Saturday, the 2nd inst. was a great success: the day was fine, the flowers splendid, and the visitors numerous and well-dressed—better dressed, we should say,—more artistically, than we ever saw the same number of English people together before. This opinion may be mere fancy or the result of a particularly easy frame of mind at the moment, but certainly the impression exists. Amongst the flowers there was a perfect blaze of azaleas, gigantic in size and dazzling in colour. The upper range of fountains played for the first time, as we announced would be the case, to the perfect satisfaction, we believe, of those concerned. We must endeavour before long to give some detailed information as to the water-works generally. The concert on Monday was to some extent less successful than the flower-show, inasmuch as the music could not be perfectly heard: nevertheless there was enough to delight any reasonable being. On a future similar occasion it might be worth while to try the effect of a properly constructed canopy, or other arrangement, at some height above the heads of the performers.

Mr. Owen Jones has completed his restoration of the Hall of the Abencerages, in the Alhambra Court, and has produced one of the most extraordinary effects of colour ever seen. The ceiling, "scooped into ten thousand cells," and illuminated only through small openings filled with stained glass, is like one enormous jewel.

ARCHITECTS' CHARGES AND BRIDGEWATER CHURCH.

SIR,—The charges in this case, which you have given, must cause great concern to the profession; and, as they are calculated to reflect discreditably upon the body, I shall take the liberty of stating what I conceive should have been the proper charges, and my reasons, leaving it to the architect employed to adduce the grounds upon which he justifies his departure from the usual practice of, at all events, London practitioners, whether for provincial or London jobs.

The largest charge for design, drawings, specification, and professional supervision is 5 per cent. which would have made the first item 197*l.* 10*s.* instead of 259*l.* 19*s.* 2*d.*

But there appears to be an anomalous combination, in one and the same individual, of architect and clerk of the works,—*a course perhaps necessary in provincial parts*, but most irregular. However, if accepted, the party in question must abide by the consequence; and, in consideration of his two guineas weekly salary for *personal* supervision as clerk of the works, forego his claim for remuneration for *professional* supervision as architect; consequently 2 per cent. more should be deducted from the first item, equalling 79*l.* The account, therefore, should have stood thus:—

For necessary designs, drawings, and specification, 3 per cent.	£118	10	0
For personal superintendence as clerk of the works	216	7	0
I presume that the small subsequent items of surveys, reports, and estimates had no reference to the works previously stated as amounting to 3,946*l.* 3*s.* and charged for; consequently they may be considered genuine	29	11	0
	£364	8	0

The charge for taking out quantities for builders for new chancel roof was met by previous charge of 7*l.* 14*s.* for drawing and estimate of repairs of the same; and the sum of 24*l.* 13*s.* 10*d.* charged for estimating value of works proposed, and measuring up works performed, appears already included in the first item at the head of the bill.

Consequently, judging from the face of the account, and with one further explanation, the charge for the architect and clerk of the works, as combined, should seemingly have been 364*l.* 8*s.* instead of 570*l.* 7*s.* 4*d.*

If, on such occasions, the parties who feel themselves aggrieved would only agree to refer such matters to the council of the Royal Institute of British Architects, the employer would be protected from any irregularity of practice, and the professional man upheld in every legitimate charge for "*bonâ fide*" services; for that Body are too deeply sensible that the true interests of the profession consist in that which is fair, equitable, and high-minded, to protect oppression, or to justify extortion.

T. L. DONALDSON.

THE WALL OF OLD LONDON.*

BEFORE the reign of Edward IV. the City wall was continued in a straight line from the angle a little north of Newgate to the Thames. Leave was, however, given for the removal of it from Ludgate to the river, in order to afford space for the erection of portions of the Blackfriars monastery. The engraving, fig. 4, p. 223, shows an interesting fragment of the old wall, and parts of the monastic buildings erected upon it, which are still preserved below the offices of the *Times* newspaper.

The whole of this neighbourhood was destroyed by the Great Fire of 1666, and afterwards, on part of the site of the Blackfriars, the King's printing-house was erected. Here the first *Gazette* and the royal proclamations were printed in the reign of Charles II. In 1688 the King's printing-house was attacked by a mob, which had risen against the Papists, and a large quantity of printed and other materials destroyed. In 1738, the printing-house was burnt almost to the ground, but soon afterwards rebuilt. On the removal of the King's printer, these now well-known premises came into the possession of the proprietors of the *Times*, and here, on November 29, 1814, was produced the first newspaper ever printed by a mechanical apparatus, and the first newspaper printed by steam. While making some of the alterations which from time to time have been required to

* See p. 221, ante.

meet the extraordinary increase in the circulation of the *Times*, the piece of old wall just mentioned was found. One part of this interesting relic is evidently much older than the other, and the most ancient was found to be so hard, as to set at defiance the tools of the workmen. During the alterations, several encaustic tiles, two finials of the fleur-de-lis shape, a Roman tile, and in the neighbourhood of the printing-office, several melting-pots and pieces of glass, mostly in a half-manufactured state, were found. These are carefully preserved at the *Times* office,—the parties having charge of them considering it a duty to do so: doubtless, however, they would gladly deposit them in some public place, provided they would be properly cared for. An ancient drain formed of the materials of the old wall, was also discovered. The melting-pots and pieces of glass are worthy of notice, for in Glass-house-alley, close by, James Verselyn, stranger, a Venetian, about the year 1580, or perhaps somewhat before, was the first that set up a glass-house in London for making Venice glasses, for which the queen granted him a privilege under the Great Seal. But the glass-sellers in London were much aggrieved at this, and showed the Lords of the Privy Council that it was the overthrow of fifty householders, using only the trade of selling glasses. There was a prohibition in the patent, that none should sell such glasses but the said Verselyn alone.

Let us, however, now retrace our steps to the Old Bailey; and having seen that in a plan of Farringdon Ward (without), engraved in Strype's edition of Stowe, published in 1720, there is a street called the Little Old Bailey, which branches from the Old Bailey towards St. Sepulchre's Church, and from which the *Green Arbour* runs (this street is now removed), we will, from the Old Bailey, enter Green Arbour-court, and at the bottom we come to a steep flight of steps, which in a small way serves to remind us of Edinburgh and Newcastle-upon-Tyne. These are the "Break-neck Steps," mentioned by Ward in his "London Spy."

Oliver Goldsmith lived for two years at not a long distance from the steps: the house has for some time past been removed, and the site occupied by stables and waggon offices. During the time he resided here, he wrote the "Inquiry into the State of Polite Learning in Europe;" and here Bishop Percy, who was then collecting materials for his "Reliques," called upon Goldsmith, whom he found in "a wretchedly dirty room, in which there was but one chair;" and when, says Percy, "from civility he resigned it to me,—he was himself obliged to sit on the window. While we were conversing some person gently tapped at the door; and being desired to 'come in,' a poor ragged little girl, of very decent behaviour, entered the room, who, dropping a curtsey, said,—'My mamma sends her compliments, and begs the favour of you to lend her a potful of coals.'"

At the bottom of Breakneck-stairs, is a portion of old masonry, marked in the plan. This has been supposed to be a portion of some outward defence: it seems, however, to be more like the remains of a building formerly connected with the Chancery, which in old times stood somewhere about this spot. Before leaving the Old Bailey, it may be worth while to mention that in Ship-court, three doors from Newgate-street, on the west side, Hogarth's father kept a school; and at No. 68, the second door south of Ship-court, the notorious Jonathan Wylde for some time resided.

From the bastion, a little to the north of Newgate, the wall continued in a north-east direction through St. Ann's Churchyard to Noble-street. On this were, including the above, five half-circular bastions, or towers. A part of the wall is left in the churchyard: it does not, however, present any remarkable features: from the angle at Noble-street, the wall runs nearly north to Cripplegate Churchyard, where the most perfect portion still remains. Nothing can be more picturesque than these venerable remains of former times. There were three towers on this part of the wall; and our engravings show that two of these remain,—that to the south forming part of Barber Surgeons' Hall: the wall stretching along the churchyard shows the peculiarity of the construction, and the various repairs and additions which have from time to time been made.

The interior of the principal tower which overlooks Cripplegate Churchyard, can be easily reached by passing along Monkwell-street, and then through the gate of Lamb's Chapel.

In former times, the site of the parish of St. Giles, Cripplegate, was a fen or moor; and the houses and gardens thereupon were accounted a village without the wall of London, called Mora; which in process of time increased in number of buildings, and was constituted a prebend of St. Paul's Cathedral of that appellation; "and now," says Chamberlain, "this village is totally swallowed up by London and the prebendary of Mora, or Mora without the wall of London, which hath the ninth stall on the right side of the choir in St. Paul's Cathedral, of whom it is said Nigellus Medicus was the first prebendary."

After leaving Cripplegate, the next fragment is a portion of Aldermanbury postern (see engraving). Here, behind the gate of the White Horse-yard, the groove in which the hinges of the old gate formerly worked are distinctly visible. The wall can be traced for some distance along this yard, wherein is the part engraved which, by showing the section, gives a good idea of the thickness and additions at different times.

At a short distance from Aldermanbury postern, in New Basinghall-street, was a second postern.

The next visible part of the wall is that, also engraved, in the churchyard of St. Alphage, on the wall. Here the outward stonework is much decayed, and crumbles to dust in large quantities to the wind and weather. A gentleman, living near the spot, says that the inner work of the wall is extremely hard, and that, in making an incision into the wall, for the purpose of fixing a safe, it cost 30s. to sharpen and repair the tools of the workmen.

From hence past Moorgate-street, Bishopsgate, Bevis Marks, Duke's-place, Houndsditch, to near the Tower, no appearance of the wall is to be discovered, until we come to that in the flax warehouses and mews; and the part, also engraved, which immediately adjoined the Tower postern: the engraving shows the west side, which, until lately, was one of the most perfect and extensive fragments of the wall, but it is now hidden by stables, &c. At the base of this the Roman work was distinctly visible. In passing from Tower-hill to the east, the narrow passage, in which are still the posts, was formerly the site of the Tower postern: this, some centuries ago, fell down, and was never replaced, except by a strong barrier of timber.

Chamberlain, in his "History of London," published about 1770, mentions that at that time there remained opposite the end of Gravel-lane, on the west side of Houndsditch, a tower 26 feet high, much decayed, and of similar construction to that mentioned by Dr. Woodward. Within the wall of this tower was a door in Shoemakers'-row, fronting the passage into Duke's-place.

Maitland says, that in searching for this tower, about 80 paces south-east towards Aldgate, he discovered another of the same construction, 21 feet high, perfectly sound and much more beautiful than the former, the bricks being as sound as if but newly laid, "while the stones in some parts have fallen a sacrifice to time:" that tower stood at the top of Rose and Crown-court, in Houndsditch.

Maitland also informs us that on the south of Aldgate, at the lower end of a street called the Vineyard, is the basis of "another Roman tower," about 8 feet high, which supports a new building of 3 stories in height, in the wall of which is fixed a large stone, with the following inscription:—

"Glory be to God on high, who was graciously pleased in a wonderful manner to preserve the lives of all the people in this house, 12 in number, when the ould wall of this bulwark fell down, 3 stories high, and so broad, as two carts might enter abreast, and yet without anie harm to any of their persons. The Lord sanctify this his great providence unto them. Amen, and amen."

"It was Tuesday, the 23rd of September, 1651."

In Chamberlain's time the inscription was quite legible.

Exclusive of the city of London within the wall, there is a large space of ground without the wall, and this is encompassed by an irregular line, called the line of separation, by which the City is divided from the county of Middlesex. This line begins at Temple-bar, where it abuts westward, upon the liberty of the Duchy of Lancaster, which is without Temple-bar. It extends itself by many turnings and windings, through parts of Shire-lane, Bell-yard, Chancery-lane, by the liberty of the Rolls, &c. into Holborn, almost opposite Gray's-Inn-lane, where there was a bar—that is, two posts with rails and a chain to fix across, on any emergency.

From Holborn-bars the line continues, with various windings, by Brook-street, Furnival's-inn, Leather-lane, Hatton-garden, Ely-place, Field-lane, and Chick-lane, and so on to Smithfield-bars. It runs between Long-lane and Charter-house-lane to Goswell-street, and up that street to the *Bars*.

From the bars in Goswell-street (where the manor of Finsbury begins) it extends itself, by windings, across Golden-lane to Whitecross-street, and Milton-street. In each of the above streets were bars. From Milton-street it is continued through Ropemaker's-alley to where the posts and chains were, in the high road from Moorgate, and thence by the north side of Moorfields, where it turns northward up to Norton Folgate, and there meets the bars in Bishopsgate-street, whence it runs eastward into Spitalfields, all abutting upon Norton Folgate. From Norton Folgate it runs southward by Spitalfields, and thence south-east, by Wentworth-street, to the bars in Whitechapel.

From Whitechapel-bars it winds southerly, by the Little Minories and Goodman's-fields, whence it returns westward to the Minories, and thence inclines more to the west until it comes to London-wall, when it abuts upon the Tower Liberty, and there it ends.

The whole length of this line of separation is called 21,370 feet, and yet the ground comprehended between the line of the City wall and this line of separation is only about 300 acres.

The circumference of the wall of London is stated to be as follows:—From the Thames, along Fleet-ditch, to the first north angle, 270 yards; 140 yards east to Ludgate; 330 yards to the angle north of Newgate; then eastward 390 yards, to 55 yards eastward of Aldersgate: thence it runs northward 240 yards, to Cripplegate-churchyard; from thence to Cripplegate; and so continuing eastwardly 1,000 yards, to Bishopsgate; and thence south-eastwardly 480 yards, to Aldgate; whence it runs still south-eastwards 465 yards, to within 20 yards of the middle of the north part of the Tower-ditch; in the whole 3,315 yards; to which adding the distance from the Tower to the Fleet-ditch, which is 2,170 yards, the whole circumference of the City within the walls appears to be 5,485 yards, or 3 miles and 205 yards.

The whole ground within the walls of the city of London amounts to 373 acres and four-fifths of an acre.

Fig. 7. Wall in Cripplegate Churchyard; part of Barber Surgeons' Hall in the distance.
Fig. 8. Bastion in Cripplegate Churchyard.
Fig. 9. Wall in Cripplegate Churchyard.
Fig. 10. Section of wall in White Horse-yard, London-wall.
Fig. 11. Remains of Aldermanbury postern.
Fig. 12. Ditto in Norton Folgate.
Fig. 13. The Churchyard of St. Alphage.
Fig. 14. Remains of the wall near the Tower Postern.
Fig. 15. West view of the London-wall, near the Tower.

MODEL DWELLINGS FOR WORCESTER.—The committee of the new association for the erection of improved dwellings at Worcester have decided that the laying of the first stone of their model dwellings in Copenhagen-street shall take place on the 18th of June instant, and that Mr. John Dent will lay the stone. Among the public bodies invited are the mayor and corporation, the Company of Clothiers, the fraternity of Freemasons, and the clergy of all denominations in the city. The assistance of the cathedral choir has been promised, and the band of the Worcestershire Militia will be in attendance.

THE WALL OF OLD LONDON.

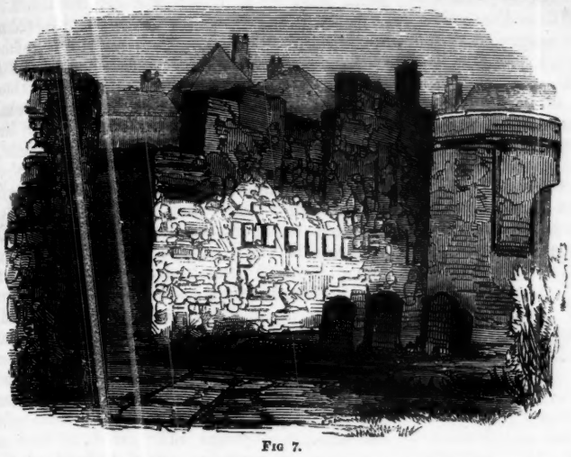


FIG 7.

FIG. 8.

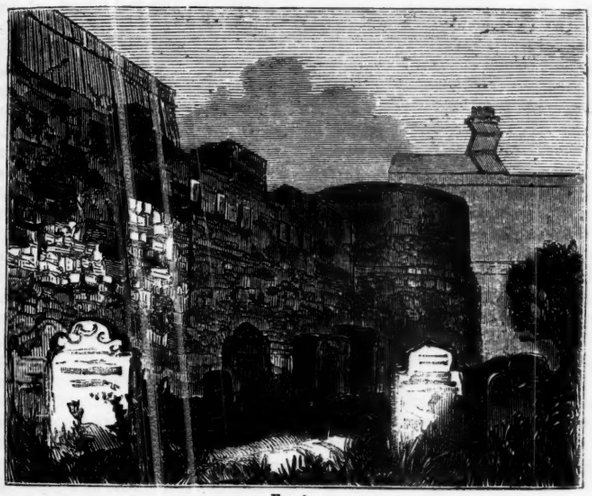


FIG. 9.

FIG. 10.

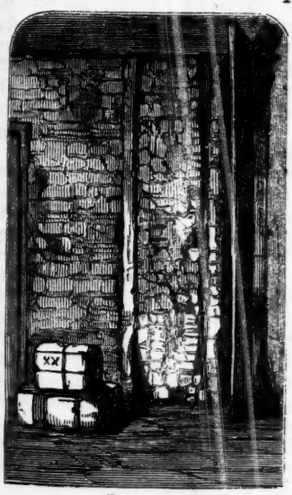


FIG. 11.

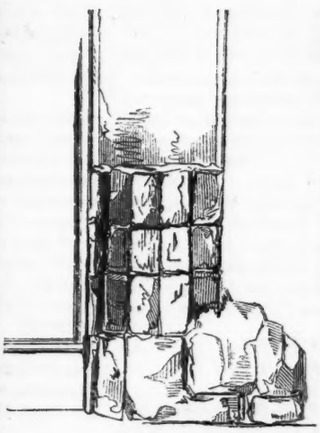


FIG. 12.

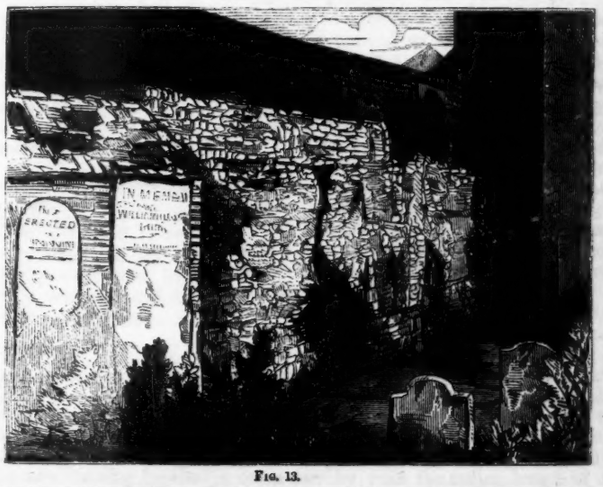


FIG. 13.

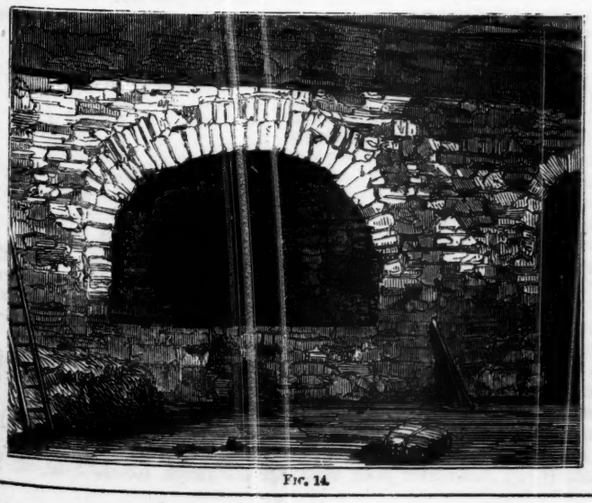


FIG. 14.

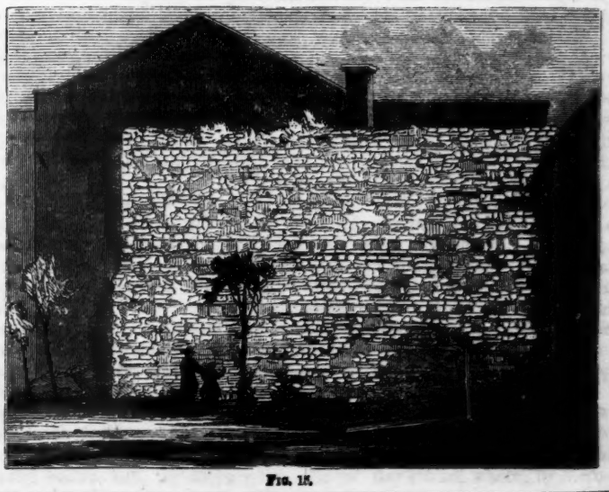
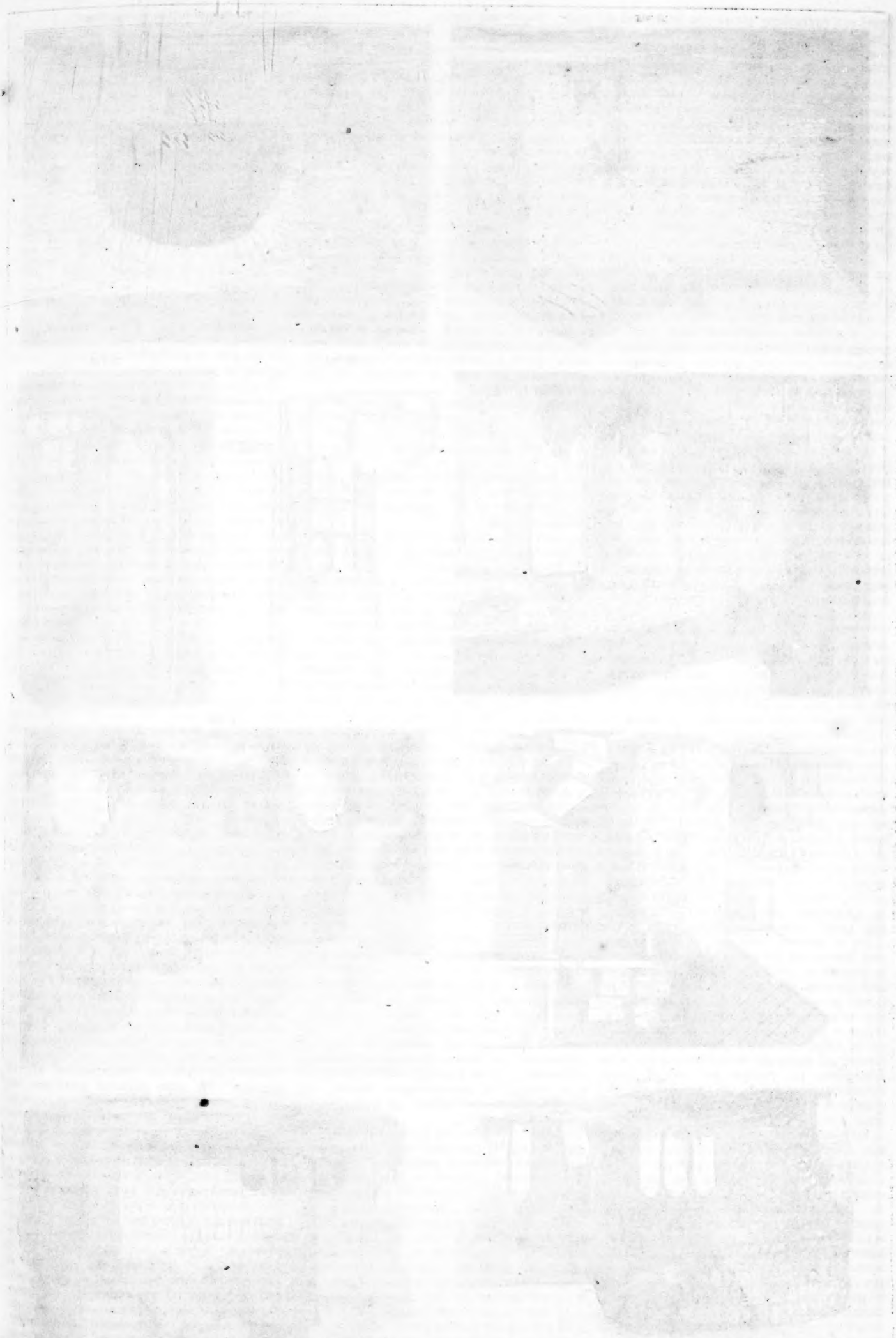


FIG. 15.



CHURCH-BUILDING NEWS.

Colchester.—A new church, in the rural parish of Myland, was consecrated week before last. The edifice, which is dedicated to St. Michael and All Angels, was erected according to plans supplied by Mr. Hakewill, the builders being, for the stone and brick work, Mr. White, of London; and for the wood-work, Mr. S. Grimes, builder, Colchester. The church is in the Early English style of the thirteenth century, and comprises chancel, nave, and aisle, with broached spire of oak shingles. The body and tower are of Kentish rag-stone, with Caen stone dressings for the windows and porch. The width of nave and aisle is 37 feet, and length 61 feet; height from floor to pitch of open-timbered roof 39 feet. The chancel—in length, 32 feet—in width, 21 feet—is elevated one step above the nave, and on each side are the chancel stalls, formed of stained wood, with benches surmounted by carved angels; the back bench on each side being crowned with a group of angelic figures, executed in stone. The tower, containing one bell, is 40 feet high, and from it springs a broached spire 50 feet in height, to the summit of the cross. The church is fitted up for 400 persons, mostly free. The internal arrangements are very simple. All the seats are open, and formed of polish-stained wood. On either side of the chancel are six stained windows, three being memorials erected by the widow of the late Rev. P. T. Strong, thirty-two years rector of the parish, but the donor of the remaining three is unknown. Miss Strong has also contributed a stone baptismal font, erected by Mr. Crisp, of this town. The former rector, the Rev. A. Æ. Julius, presented a stained-glass window for the eastern end of the church. It consists of five compartments, the centre containing a figure of our Saviour, to whom on the right and left the Law and the Prophets do homage, and the remainder is filled up with incidents illustrative of the ministry of angels. The necessity for the erection of a new edifice had long been felt in this parish, the old church being in a most dilapidated condition; and when this matter was brought under the notice of Earl de Grey, the patron, his lordship most liberally offered to provide a site for the erection, and to contribute 500*l.* towards the requisite funds. This formed the nucleus of the subscription. Upwards of 2,000*l.* were accumulated, and in the early part of last year the building was commenced.

Treswell.—The reopening of the parish church of Treswell, near Retford, took place on Tuesday in week before last. This church, which is dedicated to St. John the Baptist, has been undergoing restoration, and is now completed. The tower remains in a bad state of repair. The interior of the church is furnished with about forty benches, capable of holding 200 people. There was originally a mixture of style of windows, but the Early Decorated has been fully carried out in the restoration of the church. The whole has been new roofed; and the old brick porch has been replaced by one of stone of Perpendicular character. Mr. A. Wilson, of Peterborough, was the architect, and Mr. Lees, of Retford, the contractor, for the restoration.

Tiptree.—The Tiptree Church Committee opened the following tenders on Monday week:—

B. Wells	£1,897
Cubitt	1,996
W. Higgs	2,112
Wilson	2,269
R. Banham	2,270
Gardener	2,287
Battesbury	2,367
Scarborough	2,436
G. Day	2,468
Cooper	2,511
Wardle and Baker	2,630

The tender of Mr. Wells, of Bermondsey, was accepted. The church is to be roofed in about October, and completed before the last day of June, 1856. Mr. Christian is the architect.

Braintree.—An attempt is now being made to obtain a fund by voluntary contributions, wherewith to restore the parish church here. The estimated expense will be 4,000*l.* The patron, Mr. R. Lindsay, has subscribed 100*l.*

Romsey.—The contracts for the construction of the nave of the Abbey Church have been taken by Messrs. Gover, of Winchester, and R. Huder, of Romsey.

Weymouth.—The foundation-stone of the chapels belonging to the cemetery here was laid on Wednesday week.

Birmingham.—The foundation-stone of the new church of St. Matthias, in the parish of St. George, at the junction of Wheeler-street and Farm-street, was laid on Wednesday week. The contractor is Mr. James Wilson, of Handsworth. The estimated cost of the building, with endowment, &c. was 6,430*l.* The plan of the church is rectangular, and it consists of nave, aisles, chancel, north and south chapels, with sacristy. It will accommodate 1,151 adults, 741 free. The style is Middle Pointed, with clerestory. It is to be constructed of brick, with Bath stone dressings, from the design of Mr. J. L. Pedley, of Birmingham, architect.

Smethwick.—The foundation of the new Wesleyan Chapel, Smethwick, was laid on Monday in week before last, by Alderman Ratcliff, of Edgbaston. The building is designed in the Italian style, to be of brickwork, with stone and Portland cement dressings. The gallery is constructed at one end; the other end recessed for the orchestra. The accommodation is for 960 sittings, 350 free. Mr. G. B. Nicholls, of Westbromwich, is the architect, and Mr. J. Hanley, of Smethwick, the contractor for the whole of the works. The total cost of the erection will be about 2,500*l.*

Liverpool.—The Hanover Independent Chapel, at the corner of Warwick and Mill-streets, Toxteth-park, was destroyed by fire on Friday last. The building was in course of repainting and repairing; and a plumber who was repairing a gas-pipe immediately under the organ, in order to test the soundness of the pipe, turned on the gas at the meter, applying a light at same time to the pipe, when an explosion underneath the organ took place, and the flame ignited the woodwork in proximity to it. The dryness of the wood caused the flame to spread rapidly, and, instead of turning off the gas at the meter, the plumber tried to extinguish the flame itself, but finding his efforts unavailing, he gave the alarm, but the whole building was gutted by the fire, the outside walls alone remaining standing. The loss is estimated at 800*l.* to 1,000*l.* but the building is said to be insured for 1,500*l.*

Hartlepool.—The repairs of Greatham Church have been contracted for by Mr. M. Proud, of Stranton, and were commenced week before last. The amount of Mr. Proud's tender is said to have been 500*l.*

Hull.—The organ of Holy Trinity Church here has been restored by Messrs. Forster and Andrews, of this town. The instrument, indeed, appears to be mostly new, although all the old pipes that were not really past restoration have been retained and carefully restored, and the new pipes "voiced" to correspond in tone.

PROVINCIAL NEWS.

Norwich.—The new workhouse question remains very much *in statu quo*. The guardians have re-affirmed that a new house is necessary, and nothing more.——The new building for the Free Library is rapidly progressing, and will be finished, probably, according to contract, in October. A meeting of the committee was held last week, and a proposal considered for raising the building a story higher, in order to afford accommodation for the School of Art. The surveyor submitted a plan and estimate, showing that this could easily be accomplished for a comparatively small expenditure.

Chelmsford.—A trial of the waterworks connected with the Chelmsford Board of Health has been made, to ascertain the nature of the supply in the event of a fire occurring in this town. A stand pipe was affixed to two of the fire-plugs near the Shire-hall, and hose being attached to one, a stream was thrown up higher than that building; and a trial of two jets playing at the same time showed but little diminution in the height and force.

Kempston.—The completion of the new school at Upend, in this parish, with residence for a mistress, at the cost of upwards of 900*l.* was celebrated, on Wednesday before last, by an entertainment given in the old National School-room by Mr. Talbot Barnard, of the Hoo, to the contractor, Mr. John Conquest, and the workmen employed in its erection, to the number of forty. The plans were by Mr. Horsford, of Bedford. The village bells rang throughout the evening.

Dudley.—The Bill for the construction of the new Dudley tunnel on the Old Birmingham Canal Company's line, recently passed through the House of Commons. The tunnel is to commence near Dudley Fort, and be carried under the Rowley Hills nearly to Tividale. The expense of construction will amount to about 230,000*l.* including a double towing-path. The length of the tunnel will be 2,567 yards, and its width 28 feet.

Taunton.—The foundation-stone of the new Assize Court, at Taunton, will shortly be laid by Lord Portman.

Birmingham.—The decoration of the Town-hall, under the superintendence and from the designs of Mr. Ingram, is in progress. The ceiling is now covered with a series of designs in accordance with the architecture of the Hall. On the ribs of the ceiling arabesques are already painted, and the gilding of the cornice has made considerable progress.

Coventry.—The new schools for St. Michael's parish were opened on 31st ult. by the Bishop of Worcester.

Lichfield.—The foundation-stone of new parochial schools at Alrewas, was laid by Mrs. Levett, of Wichnor Lodge, on 29th ult. Mr. Christian is the architect, and Mr. T. Andrews, of Barton, the builder.

Liverpool.—The new borough jail at Walton is nearly completed. It comprises all the modern improvements, and no expense has been spared to render it complete in all its departments. "Viewed from Walton," says the local *Times*, in describing its general appearance, "the gaol has the appearance of a strong and powerful fortress, begirt with lofty walls, loop-holed towers, and commanding turrets, surmounted by a flagstaff." Approaching by the new street, on the east and west sides of the entrance, are two mansions, the governor's and the chaplain's, each approached by flights of steps, with ornamental gardens around; the boundary wall being depressed so as to place the houses on the exterior of the prison. This arrangement gives an improved aspect to the entrance. Between these houses is the central entrance, in the Norman style of architecture.—Here is lodged the deputy-governor, whose residence is built of red brick and Bath stone, and flanked with massive castellated towers. The Bath stone, however, according to the paper just quoted, does not give good promise of a lasting reputation in these northern climes. The base is of red sandstone, from Runcorn, which material is also used in the main structure. The entrance is spanned by a Norman archway, leading to a courtyard and groined vestibule. The corridors of the prison are commanded from central halls, in four directions. These corridors diverge from one another at right angles, are open from the floor to the roof, lighted by skylights, and bay windows terminate the extremities of the corridors. The junction corridor runs the entire length of the building, from east to west, and from it branch off nine wings, as well as the debtors' two divisions: in the centre, however, are doors to separate the males from the females. Flights of stairs at the ends, of iron and slate, and circular stairs, of the same material, in the central-halls, communicate with three tiers of galleries running round the interior, and communicating with the cells, a fourth gallery reaching the cisterns and other appliances for sanitary purposes, above. The central halls are two in number,—the east and the west: they are covered with lantern-lights of iron and rough plate-glass. A balustrade of iron encircles the galleries on either side of the corridors, along which food for the prisoners is conveyed to the respective cells, having previously been hoisted on trays from the kitchen in the basement. Each gallery possesses a traversing railway, working on the balustrades, and, in addition, is furnished with bell and tube for instantly communicating with the kitchen. At the angles of the central-halls are the officers' day-rooms, where, by stepping

outside the door, they can command the whole of their department, almost at a glance. The corridors are lighted at night by gas sunlights, placed in the ceiling, one in each corridor. The flooring is laid with blue Caithness flags, and the ceiling, where skylights do not intervene, is varnished, and the woodwork displayed. Binding arches, placed in the roof at intervals, add strength to the building, and support the extraction shafts for carrying off foul air. The margins of the doors are of a deep red; the floors laid with slates; the arched brick ceiling whitewashed; the walls of stone-colour. The dimensions of the cells are 13 feet 7 inches by 10 feet high. The cells, with their gong wires and indicators, and their various conveniences, are more like studios than felons' prisons. The cells in the debtors' wings are dismal and cheerless in comparison, these being, it seems, an afterthought. The visiting stalls for felons are strongly-barred cages, friends and relatives communicating across a passage 3 or 4 feet wide, which an officer meantime perambulates. The separate system prevails throughout the entire establishment. The chapel is in the centre of the main building, and at the back of the grand entrance. The Norman style has been carried out in the decoration, which is very plain. The four angles of the prison are flanked by towers, tenanted by warders, and the whole is encircled by two walls, the inner 18 feet high, and the outer 7 feet. Ventilation is effected by immense air shafts, which surmount the summit of the building and communicate with the flues. The cells are warmed and made comfortable in winter by hot air. The locks, gates, hinges, and other appliances, of that class, have been furnished by Mr. C. Smith, jun. of Birmingham; the brickwork, masonry, and joinery, by Messrs. Furniss and Kilpin; the plumbing by Messrs. Knight and Son; the carpenters' work, by Mr. Burroughs; ironwork, by Messrs. Pearson and Co.; gas, by the United Gas Company; and some of the lamp-posts by Mr. Rankin; the clockwork, by Mr. Condliff; and the cooking and heating apparatus, by Mr. Haden, of Trowbridge. ——The estimated cost of the proposed great Landing Stage, the largest of the kind ever erected, will be from 110,000*l.* to 115,000*l.* The area of deck space, according to the local *Journal*, will amount to nearly two acres, affording room for the erection of light buildings of wood and corrugated iron, to any extent that may be required. It is to be moored in the river opposite the Prince's Pier, and will be 1,000 feet long by 82 feet wide, supported chiefly by pontoons.

Preston.—The market-place and new town-hall building committee report to the council that "the following may be considered an estimate of the probable cost of the buildings:—

Mr. Armstead's tender	£11,715
Iron-work for fire-proof portion of building	1,100
Warming and ventilating	130
Iron shutters	491
Grates, gas-pipes, and other fixtures and contingencies, as stated by Mr. Hill, say	1,200
Architect's charges, say	800
Clerk of the Works, say	100
Total	£15,536."

CASH ADVANCES FOR THE POOR.

SOME years ago a correspondence on this subject appeared in your columns in which I had the honour to bear a part. I observe that the subject is re-opened, apparently by the same writer as on the former occasion. * * * In this country the *Mont de Piété* system is an impossibility, for every man of business knows that the red tape and routine of a Government establishment can never successfully stand its ground against private enterprise. For the service of the public such institutions are peculiarly inefficient: departments are multiplied, and the system of check and counter-check carried to such an extent, that the time of the pawner is occupied to a degree exceeding by four or five times the space occupied in pledging and redeeming an article in London,—and time is money. Besides this, its charges, although apparently lower, are in practice higher than the English rate. The writer of "Cash Advances" evidently does not observe the distinction between per cent. *per annum* and per cent. upon the sum lent, yet between the two there is a very important difference. As most of his figures are mis-stated, I will here describe what the charges of the London pawnbrokers and of the Paris *Monts de Piété* really are. By the 39 & 40 Geo. 3, c. 99, the English pawnbroker is, under a very heavy penalty, limited to the following rate of profit upon his loans:—Not exceeding 2*l.* 2s. it is 20 per cent. per annum, or 4d. per pound per month: above 2*l.* 2s. and not exceeding 10*l.* it is 15 per cent. or 3d. per pound per month. Beyond 10*l.* the severe restrictions of the Pawnbrokers' Act do not apply;—one reason why, "the merchant and trader can obtain money at 5 or even at 3½ per cent." The charges of the *Monts de Piété* are not what is stated in your paper of the 19th ult. but 9 per cent. per annum (nearly 2d. per pound per month), while the commissioner's fees are three per cent. upon the sum advanced, without regard to the duration of the loan. In order to understand the working of the two systems, it must be borne in mind that a very large majority of the pledges in London are redeemed within the first month, and not more than 15 per cent. remain over the fourth month. The following are the charges:—

	One Month.	One Year.
LONDON.—A loan of 4*l.* Interest at 15 per cent.	s. d.	s. d.
	1 0	12 0
Ticket money	0 2	0 2
	1 2	12 2
PARIS.—A loan of 100 fr. (4*l.*)	fr. c.	fr. c.
Interest at 9 per cent.	0 75	9 0
Commission fees	3 0	3 0
	3 75	12 0
LONDON.—A loan of 2s. 6d.	s. d.	s. d.
Interest at 20 per cent. (no ticket money under 5s.)	0 0½	0 6
PARIS.—A loan of 3fr. (2s. 6d.)	fr. c.	fr. c.
Interest at 9 per cent.	0 2½	0 27
Commission fees	0 9	0 9
	0 11½ (about 1½d.)	0 36 (3½d.)

From this it will be seen that while there is a saving on the French system in transactions for long dates; upon the short periods, which form the bulk of the English trade, the *Mont de Piété* charges much more than the pawnbroker.

There is another point upon which the writer of "Cash Advances" does not give a perfectly correct statement; that is, in describing the pledge as "redeemable at twelve months, *then to become forfeit*." Now the pawner is entitled to an additional three months' grace if he chooses to demand it, while in the case of pledges for more than 10s. the pawnbroker is bound to sell them by public auction, duly advertised, and to keep a record of the result; the pledger being entitled at any time within three years to claim whatever surplus may have been realized beyond the amount of the loan and interest. The reason why this rule is not applied to pledges of lower value is this, that it does not answer to sell pledges of such small worth by public auction, and the enforcement of the rule would only have the effect of preventing small loans altogether.

With respect to the storage of furniture, to which the writer alludes towards the close of the article, I can assure him that there are very few pawnbrokers in London who will take in furniture at all, unless of a very costly description; and this because the rate of interest which the law allows them is *less* than the value of warehouse-room. Suppose a chest of drawers pawned for 1*l.* the interest would be 4d. per month, less than 1d. per week; and who would *warehouse* it at that rate?

So far from the rate of interest allowed by the Pawnbrokers' Act upon small loans being exorbitant, the reverse is the case. The working cost of every pledge received by a London pawnbroker averages about 1½d. to 2d. The Irish *Monts de Piété* found their average expense per pledge nearly 4d.; and as their trade lay in goods of a low value—their loans averaging only 3s. 3½d. per pledge—they were ruined by the excess of their expenditure over their income, although charging interest at 25 per cent. per annum (their expenses being 30 per cent.). In the Paris *Monts de Piété*, the expenditure—including interest upon a portion of its capital borrowed at 3½ per cent.—is about 9d. per pledge. Now the English Act restricts the pawnbroker to a charge of only 0½d. for loans of 2s. 6d. and under, if redeemed (as most of them are) within the first month. The natural effect of this limitation is, that the pawnbrokers, to a great extent, decline the business of small loans, which philanthropists deem so profitable, but which experience proves to be ruinous. Let us now glance at the result.

The poor must have money: if the pawnbroker refuses an advance, they will obtain it elsewhere. In London and the great manufacturing towns there is a swarm of shops—generally marine-stores, or chandlers',—wherein an illicit system of pawnbroking is practised. They are called "dolly-shops," "leaving-shops," &c. and their system of trade is this:—they profess to *buy* the article which it is sought to pledge, upon the understanding that they will *resell* it to the original owner within a certain time—ordinarily one month—and at an increase of price equal to the profit that it is desired to make. The details of this bargain are tacitly understood: no ticket or acknowledgment is given; and pains are taken to render the transaction as distinct as possible from pawnbroking, in order to avoid coming under the regulations of the Pawnbrokers' Act. In practice the system amounts to this, that money is advanced to the poor, under pretence of a fictitious sale and resale, at the rate of one penny *per week* for each shilling; and this without any security that the dealer will fulfil the implied contract of resale at all. In London, Glasgow, and other towns, this illicit traffic exceeds in number—though of course not in value—the operations of legitimate pawnbroking, and the law is practically powerless to interfere, for it cannot restrict the right of buying and selling. It is a remarkable fact that these illicit pawnshops are unknown in Ireland, the reason being, that there, in addition to the interest, the pawnbroker is allowed "ticket money" upon small pledges, while in England and Scotland he is not allowed any fee of this kind, unless the loan is of 5s. and upwards.

I believe the only remedy for these very crying evils would be the abolition of the restriction on the pawnbroker's rate of interest, which, like all laws against usury, are only productive of disaster to those whom they were intended to benefit. The English pawnbrokers would be very glad to receive small pawns upon the terms allowed to their Irish brethren, but the law does not allow this; and as a consequence we have the "dolly-shop," charging at the rate of 400 per cent. per annum on transactions which the pawnbroker would be happy to execute at 40. The reason of this is obvious: as a large capitalist employing from 4,000*l.* to 10,000*l.* he would be satisfied with a smaller profit than the dollyman, who has to live and keep a house over his head upon the profits realized on a capital of 50*l.* or 100*l.*

BARDI.

FALL OF ARCHES, LAMBETH WATER-WORKS.

AT the inquest on the bodies of the unfortunate men who lost their lives by the fall of twelve arches at the Lambeth Waterworks, Brixton (p. 263, *ante*), Samuel Burgess, a carpenter, said he saw the whole of the arches go down in a mass, and the men go down with them. He first saw the concrete in the spandrill move up 2 or 3 inches, and then the arch fell, and the others followed. Some of the centres had been struck, and some had been eased in the twelve arches that fell. The concrete had been placed between each spandrill. To the best of his knowledge, no one was doing anything in removing the centres when the arches fell. The width of each arch was about 18 feet between the walls. They were 4 feet wide from the spring, and from 16 to 17 feet in the centre. The centres had been eased last Saturday, after the concrete had been put in, and removed on Monday. The labourers were putting clay on the top of the arches to protect them, and prevent the water from penetrating. The materials were good. The arches were 9 inches thick.

Mr. James Simpson said, that he was the engineer to the Lambeth Water Company, and had been so for many years. The works were at Ditton, but the company had reservoirs at Brixton for the reception of water. In consequence of the Act of Parliament the company are compelled to cover the reservoirs over. For that purpose he was consulted, and a variety of plans were laid before the company, but nothing seemed so desirable as bricked arches. Witness prepared a plan and specification, and it was agreed that the works should be carried out by Messrs. Locke and Nesham. The area of water is nearly three acres, comprised in four compartments. To carry out the covering, walls were to be erected across the reservoirs, and arches sprung over the tops, at the height of 16 feet in the middle of the reservoir, and 14 at the side. He had from time to time inspected the works as they were progressing, and he was quite satisfied with them. He considered the works were sufficiently strong for the arches. He had had great experience in water-works for different companies. He had had formed two reservoirs in Cambridge, covered over in the same way, and another at Malvern.

By the Coroner.—I cannot form any opinion as to what gave rise to the fall. The reservoirs had been built many years, and were cut out of the solid clay.

None of the witnesses examined could offer any explanation of the cause of the occurrence.

The verdict was,—"That the deceased persons were accidentally killed by the fall of certain arches at the Brixton reservoirs of the Lambeth Water-works, and the jury are of opinion that the cause of the fall of the arches arose from the fact of the centres being

removed before the wheeling and placing the earth had been completed, and we (the jury) would suggest that a half-brick course more of brickwork should in future be used in the formation of the arches."

COMPETITIONS.

The Meadows, Edinburgh.—The first prize, 50*l.* has been awarded to the design of Mr. Thomas Davies, of that city, for laying out the meadows as a public park, and the Police Commissioners have approved of the report by the joint committee recommending the adoption of the general features of that design. A reduced copy of the plan has been published by its author.

Dudley Workhouse. — We have received seven letters on this subject, condemning the course pursued by the guardians, and asserting, unhesitatingly, that the plans of some of the competitors were voted for by name, although supposed to be anonymous.

Newcastle Cemeteries.—The competition for the third of the cemeteries proposed, that for the parish of St. Andrew and Jesmond, has been decided in favour of Messrs. Middleton and Pritchett, of Darlington.

Bridport.—The Burial Board have accepted the designs of Mr. H. Hall for the cemetery, chapels, and lodge, and have awarded the second premium to Mr. Boyce, of Tiverton.

Sherborne.—The plans of Mr. H. Hall, we are told, have been accepted for the National Schools here. The competition was in this case confined to a limited number.

Peterborough.—It is said with reference to the proposed new church here, that 106 architects had applied for the particulars!

Soham Cemetery.—In response to the advertisement issued by the Burial-board, thirteen designs were sent in, and the Board selected one by a London architect, at a restricted outlay of 950*l.* The builder's tender, however, amounts to 1,852*l.* One of the designs exhibited quite a new feature in architectural arrangement, and, to a certain extent, appropriate, the windows and doors throughout being coffin shaped, and the spire formed of skeleton persiatides in acrobatic position, the vane representing a ten-pound note, the liberal premium offered by the Board to the successful candidate! "ANIMO NON ASTUTIA."

Miscellanea.

ROMAN CATHOLIC SCHOOLS IN LIVERPOOL.—The report for 1854, by a Government inspector, on Roman Catholic schools in the north-western division of England, appended to the minutes of the Committee of Council on Education, just issued, contains some interesting information on the present condition of the schools of that kind under inspection in Liverpool. Among the new schools, those of Holy Cross, and St. Thomas and St. William, are said to be fine and even costly buildings, spacious in extent, and constructed with the best materials. But, with regard to plan and organization, they cannot, in the opinion of the inspector, be considered as proper models for schools of the largest class. "Indeed, it would appear," he says, "that architects, if they would not force the promoters of schools into an abandonment of the Gothic style, must prove its suitability by an exercise of greater ingenuity than they have yet displayed, and must conceive of a school some more exact idea than that of a church with one or two floors introduced into it. A better model," he adds, "will be afforded by the Liverpool St. Francis Schools, now completed; but I consider that even in this case the omission of class-rooms renders the plan imperfect."

NORMAN FONT IN NEWENDEN CHURCH, KENT.—The picturesque but dilapidated little church of Newenden, with its village of half a dozen cottages, a toll-bar, and the never-failing alehouse, stands, half hidden in a hollow, scarce a stone's throw from the Rother, which divides alike the parish of Newenden and the county of Kent from Sussex. Curtailed of its chancel and the spire of its tower, some century and a half ago, it presents little worthy of notice. It has, however, a font, the relic of a more ancient church than the one it now stands in, which will repay the traveller for his visit. It is of the Norman period, raised on three steps, and has some characteristic sculptures on the four sides of the upper part.—G. C.

THAMES TUNNEL.—In the week ending 2nd of June, 23,269 passengers passed through, and paid 96*l.* 19s. 1d.

SCHOOLS, HACKNEY.—Schools are about to be erected for the Committee of the New Gravel Pit Chapel, Hackney. The tenders delivered showed a strange difference. They were as follows:—

Fox (Hackney)	£700	0	0
Lawrence (London).....	642	0	0
Harwood (Hackney) accepted...	438	10	0

TRADE MUSEUM AT SOCIETY OF ARTS.—An interesting selection of Samples of Animal Produce and Manufactures is now exhibiting in the Model-room of the Society of Arts. It is designed as the commencement of a general Trade Museum, or collection in illustration of the productions, industrial resources, manufactures and commerce of all countries, and comprises—1. Wool Series; 2. Silk Series (including the silk-worm and its economy; the wild silk-worms of India, allied moths, cocoons, manufacture of waste silk — silk-hat making); 3. Skin Series; 4. Horn and Bone Series; 5. Fur Series; 6. Bristle Series; 7. Feather Series; 8. Horsehair Series; 9. Lac Series; 10. Wax Series; 11. Oil Series; 12. Shell Series; and 13. Refuse Matters, derived from the previously illustrated arts, and showing the uses to which they are applied.

CHURCH BELL-HANGING.—Messrs. Hooper, of Boston, U.S. write touching an article in a recent number of the *Builder*, on some alterations in bells and bell-machinery, as follows:—It is a great while since the bell-founders of England have made improvements in bells, or mode of suspending them: hence it is gratifying to learn that their ingenuity is now exercised to overcome some of their clumsy contrivances in this branch of mechanics. Over twenty years ago our firm introduced a change in the style of suspending bells, and at that time adopted substantially the same method as that alluded to in the *Builder*. We did not think it expedient to construct the apparatus, in ordinary cases, so as to admit the clapper to strike the sounding bow of the bell at different points, although we made a bell for the City of New York, some years since, which weighed eleven tons, and was suspended so as to produce that result. We enclose a rude cut of a bell and hanging apparatus, which conveys some idea of the method adopted by us. The yoke is of cast iron, fitted with wrought iron gudgeons cast into the yoke, and accurately turned. The yoke is fitted to the bell crown with flat surface, and securely bolted through. Our firm invariably fit relieving springs, which remove the clapper from the sounding-bow of the bell when inverted, thus leaving it free to vibrate while at the set."

A "STEAM HORSE," CARRYING ITS OWN RAILWAY.—Messrs. Boydell and Glazier, of Camden Works, Camden-town, have been exhibiting their "Steam horse" performing various feats of strength. "On Saturday," says the *Morning Chronicle*, "we saw it draw, on a very rough and uneven road, eight tons of fire-brick with ease." The engine is a seven-horse common portable one reversed, the wheels being furnished with Boydell's "endless railway." On one of the last wheels, 6 feet high, a driving-wheel 5 feet in diameter is fixed, into which a small pinion on the end of the fly-wheel crank-shaft works, while the "endless railway" prevents the wheels either from slipping or sinking in soft ground. The fore-wheels are steered by means of a pole with wheel, chain, and pulleys, the same as a steam-boat; and a man at this wheel has entire control over the engine, turning, without the tender, in the narrow circle of 40 feet in diameter. At Carlisle, Mr. Boydell, the patentee, proposes showing its capability of drawing or working ploughs, diggers, grubbers, wagons, thrashing machines, &c.

APPOINTMENT OF SUPERINTENDENT OF STREETS AND BUILDINGS AT EDINBURGH.—In accordance with an intention which we have already noted, the Edinburgh Police Commission, at a recent meeting, elected a superintendent of streets and buildings, for which office there were twenty-three candidates. The following names were formally proposed by members of the Commission;—Mr. W. A. Jardine; Mr. C. M'Pherson, of Egremont, Cheshire; Mr. J. T. Thomson, Berwick; Mr. T. Knox, Holyrood, and Mr. R. Kirkwood, Edinburgh. No other candidates having been proposed, the vote was taken. Mr. Thomson and Mr. Kirkwood had the fewest votes at the first division, their numbers being four each. The latter was struck off the roll. The next vote excluded Mr. Thomson, and the third Mr. Jardine. The final division was betwixt Mr. M'Pherson and Mr. Knox, when seventeen members voted for Mr. M'Pherson, and fourteen for Mr. Knox.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—The closing meeting of the session will take place on Monday evening, the 18th instant, when a paper by Mr. G. R. Burnell, C.E. will be read, entitled "Practical Observations on Pile Foundations." Mr. Tite, M.P. will take the chair as Vice-president, and bring the proceedings of the present session to a close.

MR. TITE, THE ARCHITECT OF THE ROYAL EXCHANGE.—Our readers will have seen, many of them with great satisfaction, that Mr. Tite has been returned to serve in Parliament for Bath, and has taken his seat. With great determination and courage, a clear head, and large information, he is well adapted for the honourable position which he has attained. Good health to him!

ELECTRO-TELEGRAPHIC PROGRESS.—The following account of the successful inauguration of Chevalier Bonelli's invention — the locomotive telegraph — has been received from Piedmont:—"The inauguration of the electric telegragh, acting between engines in motion, took place on May 24, between Turin and Montcalieri, in the presence of the ambassadors of France and England. A long and animated conversation was held between two locomotives going at full speed, and also between these locomotives and the telegraph-office."——Lord Palmerston, to show the uselessness of employing spies in an age of telegraphs and newspapers, said lately in the House of Commons, that he believed every column of the *Times* was reprinted at St. Petersburgh, by means of the electric telegraph, within twelve hours of the time when it appears in London.

LECTURE ON ART AT WREXHAM.—On Thursday evening before last, Mr. Davidson, head master of the Government School of Art in Chester, gave a lecture at Wrexham, on the History of Ornamental Art in connection with Drawing, preparatory to establishing a School of Art in that town. The lecture was respectably attended, and was listened to throughout with the most marked attention. In the course of his lecture Mr. Davidson said,—Let a workman be taught to understand that building is not simply piling stones, bricks, and timber on each other: let him understand the principles of construction, give him a knowledge of practical geometry, and he will become interested in the proportion which one part bears to another. Give him a knowledge of perspective, and he will enter with a much greater degree of intelligence into the forms of the building he is engaged upon. Give him a knowledge of colour, and I feel convinced that not only will the interior and exterior of our buildings improve architecturally, but the spirit of the beautiful will shed her lovely influence over the dress, deportment, and manner of the artizan. Raise the workman's intellectual position, and he will soon work with you in his own elevation. The lecturer then proceeded with the history of Ornamental Art, dividing the subject into ancient, middle age, and modern—explained the characteristics of the various styles, illustrating each by drawings; and, in conclusion, said,—As in a literary point of view, every one can be taught to write his thoughts in a manner sufficiently plain to be understood, and also to read and understand the writing of others, so I have found that every one can be taught to express his ideas by drawing in an intelligible manner, and to understand a drawing when placed before him; and experience has shown me that the first manual difficulty once overcome, the cords which, as it were, bound the fingers, severed, the mind flows forth in a manner truly surprising—and each success, however small, nerves the industrious student to future trials, each to be crowned with similar victories. Let no one say drawing is unnecessary to him or to his children, because people have until now done without it. Unfortunately, the people of this country have done without it too long by far, until they have been often called "a people without taste."

CLERKENWELL POLICE-COURT: GREENHOUSES.—What is there to prevent (as the building is decided by the police magistrate not to be within the jurisdiction of the district surveyor,—in other words, not amenable to the rules and regulations of the Buildings' Act),—what is there, I beg to ask, to prevent the builder next week boarding over the whole of this building,—making a wooden erection of it? The decision of the magistrate is so manifestly absurd, and against the law, as to render comment superfluous, and affords one more practical illustration of the folly of asking police magistrates to decide on building matters,—or matters involving a certain amount of professional knowledge as a *sine quâ non* for their proper jurisdiction.—SPES.

IMPROVEMENTS ON THE BLACKWALL RAILWAY.—The extensive improvements on the Blackwall line are progressing towards completion. At the Stepney station, the carriage-way has been enlarged. The whole of the railway arches, from Crutched Friars, Minories, to the station at Limehouse, and from thence to the extent of the line, will be widened. These improvements will cost the company about 100,000*l.*

AN ARCHÆOLOGICAL CURIOSITY.—On the farm of Knockiebay, in Galloway, there is to be seen a ponderous stone block, with these words cut out on its upper side:—

"Lift me up, and I'll tell you more."

Obeying the enticing injunction, strangers and simple people, unsuspicious of practical jokes in archæology, have, at various periods, exerted their strength with the view of revealing the hidden mystery, when they find a cooler to their stimulated curiosity and their accelerated circulation, in the dry request to—

"Lay me down as I was before."

THE METROPOLITAN COMMISSION OF SEWERS.—A return moved for by Mr. Williams, M.P. shows that the gross total amount of rates levied by the Metropolitan Commissioners of Sewers in the several parishes of the borough of Lambeth, from 1848 to 1854, both inclusive, was 91,368*l.* making, together with loans, contributions, and other receipts, a gross total receipt of 152,844*l.* in the seven years. Of the rates levied, 50,238*l.* were collected in St. Mary's, Lambeth; 20,373*l.* in St. Giles's, Camberwell; and 20,755*l.* in St. Mary's, Newington. The grand total expenditure in the seven years amounted to 129,372*l.* of which 43,366*l.* was appropriated to the cost of new works executed; 4,230*l.* to repairs; 20,907*l.* to cleansing; 4,440*l.* to surveys; 20,253*l.* to management, including local supervision; and 31,351*l.* to the repayment of loans and interest. In the seven years already mentioned, 72,283*l.* were expended in St. Mary's, Lambeth; 27,595*l.* in St. Giles's Camberwell; and 29,493*l.* in St. Mary's, Newington. In 1854 the total receipts in St. Mary's, Lambeth, were 35,692*l.* and the expenditure 26,754*l.*: in St. Giles's, Camberwell, the receipts amounted to 12,854*l.* and the expenditure to 8,827*l.*; and in St. Mary's, Newington, the receipts amounted to 13,065*l.* and the expenditure to 11,000*l.* The rates varied from 8d. to 8d. in the pound.

LOW LEVEL STATION AT WOLVERHAMPTON.—This structure is now approaching completion. It has been built at the joint expense of the Great Western, Oxford, Worcester and Wolverhampton, and Shrewsbury and Birmingham Railway Companies; but since the amalgamation of the latter with the Great Western, this company possesses two-thirds of the station. The design is the joint production of the three engineers of these companies; Mr. Brunel, who we believe designed the roof; Mr. Fowler, engineer of the Oxford and Worcester line, who is understood to have designed the station buildings; and Mr. Robertson, engineer of the Shrewsbury and Birmingham Railway. The range of buildings is 380 feet in length, and consists, in its front elevation, of a central block projecting towards the front, in which is the vestibule for booking,—a hall, 45 feet by 36 feet, and 32 feet in height, lighted both by side windows and a skylight,—and the booking offices on each side, by means of which passengers may book for different trains at four distinct places. On the south side of this central block are the second and third-class waiting room, 36 feet long by 22 feet broad,—an arched gateway for exit, the kitchen, first-class refreshment-room, ladies' waiting-rooms, offices, &c. Another block of building projects to a less extent than the centre one at each end. On the north side of the booking offices are inspectors' office, telegraph and station masters' offices, arched gateway for exit, parcel office and cloak-room, lamp-rooms, porters' rooms, &c. The building is of blue Tipton brick, with stone dressings for entrances, windows quoins, &c. The contractor for the station is Mr. Jerram, of Leicester.

MR. MONTI'S LECTURES ON SCULPTURE.—The course was commenced on the 30th ult. Mr. Monti pointed out at starting that the aim of the lectures was to further a just appreciation of the works of sculpture by the internal evidence presented by the works themselves. To do this efficiently, it was necessary to discard,—First, the idea that sculpture is only the result of an instinct for imitation, and a desire to produce decoration and pleasure: these are only the means by which sculpture is made to exist;—Secondly, the standard of *beauty*, taken in a literal sense, applied indiscriminately to judge of art: rather have the standard of *truth*, as leading to a more just result;—Thirdly, the prevalent habit of applying in the judgment of works of different ages and nations the same and only standard of individual sympathy or predilection: being the expression of different conditions, every one of them must be judged according to those conditions that have originated them. Egyptian and Assyrian art were discussed. The second lecture treated in a very interesting manner of the Indian, Mexican, and Pelasgian-Greek sculptures, and was well illustrated by drawings.

NEW DISTRICT SURVEYORS.—On the 31st ult. Mr. John Turner was elected surveyor for the district of East Islington; and Mr. Charles Fowler, jun. surveyor for the district of Bloomsbury and St. Giles.

ILLUMINATING GAS FROM PEAT.—Messrs. Campbell, of Mary-street, Dublin, says the local *Express*, have been for some time past engaged in solving a very important problem as regards this country—the production of illuminating gas from peat: the difficulties are at length surmounted, and a quality of gas can be produced which will burn with sufficient brilliancy for all useful purposes: with half a pound of ordinary turf peat about a cubic foot of gas was made in the space of a few seconds, while all the ordinary deposits remained, such as charcoal, gas tar, &c.

PAINTINGS IN CULFORD CHURCH.—Some ancient medallions have been discovered in Culford Church, on the splays of two narrow round-headed lights in the east end, which formed the extremes of the original range, the rest of which had been removed to make way for a larger window, at which time it is supposed the extreme lights were built up. There are three medallions in each window. The chief characters seem to be, a king, a "persecutor" in dark red, a bishop in light red, and a saint in white, with the tonsure. A gridiron appears in one, with the saint laid out on it; but the whole, it is said, does not suit the story of St. Lawrence.

FIRE AT MESSRS. PENN AND SONS'.—On 1st inst. the pattern-stores of Messrs. Penn and Sons, the Government Engineers, at Deptford Pier, were destroyed by fire, the origin of which has not been ascertained. No Government work will be hindered on account of this fire, as all the business on hand for the Government is carried on at the Greenwich factory. Every one has noted the certainly "curious coincidence" of several fires having broken out of late in factories belonging to firms employed in the fabrication of war material. It is to be hoped that special watchmen will be employed to keep a constant look-out in such establishments. Had this been the case in a recent instance, it is not easy to see how it could have occurred. In the present case, however, it is imagined that "oily wipings" may have been the *spontaneous* cause of the conflagration; and the present season certainly seems to be one in which a more than ordinary tendency to such fires may be expected in London, if there be any relation of sequence in those great fires which have repeatedly occurred *after* great pestilence, as if from compensatory excess of ozone, or active oxygen, in the atmosphere, after a season of unusual deficiency; and already ozone appears to be rising into average excess, compared with its state some months since.

TO SOFTEN AND PURIFY WATER.—"An analytical chemist" recommends the following:—Mix well, 40 grains of dry oxalate of ammonia with 90 grains of peroxide of manganese, adding thereto, 350 grains of powdered charcoal. Agitate one imperial gallon of the water with one ounce of the above mixture: allow it to settle, and (after an hour or two) pour off the clear liquid. The first-named ingredient throws down all the lime present, as oxalate, which carries with it the mechanically-suspended organic matter. The oxide of manganese oxidizes and destroys the organic matter in solution, the deleterious gases from which are entirely absorbed by the charcoal. Water treated in this manner, he adds, becomes sweet, wholesome, and soft as rain-water, without the use of a filter, and even (what are called) "permanently hard" waters, can be made by this process beautifully soft, and adapted alike for lavatory or culinary uses,—economising soap in washing, and fuel and time in cooking. Last year, he states, a relation of his in the country, on changing her residence, found herself and child constantly attacked with a violent diarrhœa, the cause of which he at last traced to the impurity of the water used, and since his process has been employed (July last), nothing of the kind has been experienced.

RATEABLE VALUE, ETC. OF THE METROPOLITAN DISTRICTS.—A return moved for by Sir Benjamin Hall, M.P. shows that with a population (in 1851) of 2,363,405, and inhabited houses to the number of 306,088, the rateable value of the property assessed in the metropolitan districts to the property-tax (Schedule A) amounts to 13,462,667*l.* In the City of London the population is 127,869, inhabited houses 14,590, rateable value 1,584,351*l.* In Westminster the population is 241,611, houses 24,755, rateable value 2,420,116*l.* In Marylebone the population is 370,957, houses 40,513, rateable value to income-tax 2,510,167*l.* In Finsbury the population is 323,330, houses 37,353, rateable value 1,687,763*l.* In the Tower Hamlets the population is 539,111, houses 75,710, rateable value 1,665,429*l.* In Southwark the population is 172,863, houses 23,751, rateable value 677,326*l.* In Lambeth the population is 258,808, houses 40,317, rateable value 1,170,222*l.* In Greenwich the population is 99,365, houses 14,383, rateable value 353,609*l.* In sundry other places in Middlesex, Kent, and Surrey, not included in any city or borough, and comprising Chelsea, Kensington, Fulham, Hampstead, Clapham, Tooting, Streatham, Battersea, Putney, Charlton, Lee, Eltham, Lewisham, &c. the population in 1851 was 228,991, houses 34,714, rateable value 1,392,582*l.*

NEW CHURCH IN LAMBETH.—On 30th ult. the foundation-stone of St. Andrew's District Church, Lambeth, was laid by Admiral Lord Radstock (in the absence of the Earl of Shaftesbury). The new church, which is to be situate in Princes-street, leading out of Stamford-street, will be in the Pointed style, from designs by Mr. Teulon, and will accommodate about 1,100 persons, a large proportion free.

THE CHALON EXHIBITION, SOCIETY OF ARTS.—The Society of Arts have done so many good things that they must be pardoned one mistake: we shall, therefore, say nothing more of this "Exhibition" than to advise the council to close it at the earliest possible opportunity.

MEANS OF LOWERING SHIPS' BOATS.—Mr. C. Clifford, in a recent letter to the *Times*, draws public attention to the difficulties attending the plan of lowering ships' boats at present in use in the mercantile marine, and even in the navy, and refers to the Parliamentary report of the committee on the loss of the *Amazon* as bearing out his assertions, that the indifference of sailors to keeping their boats on board ship in a fit state for use in case of emergency, arises mainly from these difficulties. Mr. Clifford, who declares himself to be a landsman, states, that his plan, which he says has been favourably reported on by a number of nautical and scientific men, is so simple and effectual that he unhesitatingly challenges any six sailors, by the present system of blocks, tackles, and hooks, to a trial against him, single-handed, to lower and entirely free from the ship a boat laden with any freight varying in weight from 10 cwt. to four tons, either from two davits or a single yard or spar, and from any height, with the vessel going at any speed. The whole operation, he adds, is performed by one man only in the boat, who by simply paying off a rope, unlashes and frees the boat from the ship's gripes, lowers her levelly into the water, and entirely disengages her as well, whatever her weight or the number of her crew; and in such a way that it is impossible for her to cant or turn over in her descent, or for a rope to tangle or catch in its passage through the block he uses. For the sake of humanity, it is to be hoped that some opportunity will be afforded to test the efficiency of this as well as other systems that have been at different times devised for the same purpose. Government has published the necessity for some remedy for this national want: surely it is bound to take some steps to effect it without any further delay.

[ADVERTISEMENT.]

To the Editor of "The Builder."

SIR,—Numerous inquiries having been made of us daily respecting the Revolving Shutters adapted to our Premises by the Patentees, Messrs. CLARK & CO. 15, Gate-street, Lincoln's-inn-fields, we feel but too happy in having the opportunity of doing them the justice their novel and useful invention deserves. In consequence of the magnitude of our frontage, which embraces about 80 feet of Oxford-street, one entire quarter of Regent-circus, and between 40 and 50 feet of Regent-street, the process of closing with the old wooden shutters was not only a tedious, but also a very laborious task—five porters requiring forty minutes to effect that object. All this loss in time and trouble is now obviated by the above-mentioned invention,—an entire establishment being closed in every evening by one porter, in the incredibly short space of three minutes. In order to lead others to a just estimate of the superiority of this patent, it may be requisite to state that one of our shutters alone is 700 feet in superficial measurement, composed of 27,345 pieces, united by 2,900 hinges, weighing somewhat over two tons, and yet obedient to the hand of one porter! Messrs. CLARK & CO. having also executed other work for us, such as Brass Sashes, &c. &c. we feel much pleasure in recommending them: the lowness of their charges, and rigid punctuality, entitling them to the support of all those with whom durability is economy, and time saved money made. Our shutters may be seen in active revolution, nightly, at Half-past Eight o'clock.

SOWERY, TATTON, and COMPANY,
Regent-circus, Oxford-street. Linen Drapers.

TENDERS

For two houses, at Croydon. Mr. Temple, architect.

Laurence	£1,397 0 0
Todd	1,277 0 0
Wills	1,189 0 0
Ward	1,010 0 0
Simmons	975 0 0
Howlisson and Co.	925 0 0

For pulling down old shop and premises at Hanwell, Middlesex, and rebuilding on the same site two shops and dwellings. Mr. James Harris, architect. Quantities supplied:—

Myers, G. (London)	£2,300 0 0
Hancock, Thomas (Ealing)	1,897 0 0
Nye, Thomas (Ealing)	1,689 0 0
Abbott, J. M. (Hanwell)	1,672 10 0
Battey, Charles (Hanwell)	1,432 0 0

For erecting a terrace of six houses, and a separate private residence, at Leighton Buzzard, Beds. Mr. William C. Reed, architect. Quantities supplied:—

Piper, William	£14,104 0 0
Locke and Nesham	13,867 0 0
Lucas, Brothers	13,475 0 0
Patrick and Son	13,100 0 0
Ashby and Sons	12,794 0 0
Brass and Son (accepted)	12,721 0 0